
Chapter 5



Apparel and Fabricated Textiles (SIC Code 23)

A Look at the Apparel and Fabricated Textiles Industry (SIC Code 23)

The apparel and other finished products industry (SIC code 23) includes not only production of clothing, but also fabrication of other products by cutting and sewing of fabrics or related materials. This includes household furnishings such as curtains and draperies. Clothing made by cutting and joining (for example, by adhesives) paper, nonwoven textiles, and similar materials is also classified in SIC code 23. These are referred to as the cutting trades, a term that distinguishes this sector from the fabric production sector (in SIC code 22, textile mill products). Miscellaneous products that are produced in this sector range from sleeping bags to non-disposable diapers to flags. Box 5-1 lists Standard Industrial Classification (SIC) codes and their designations for this sector. In TRI, SIC codes are given as reported by the facilities; these may differ from information in economic and other data collections.

In 1996, the value of shipments of apparel and fabricated textile products was \$77.63 billion, down from \$78.10 billion in 1995 (both in current dollars). Employment fell from 947,000 to 865,000

from 1995 to 1996, the largest one-year decrease in this sector in the last decade. Apparel manufacturing is highly labor intensive, and much of the production has shifted abroad to lower-wage countries, a trend that began more than twenty years ago. Since the late 1980s, U.S. employment in the sector has decreased by about 25,000 per year. Facilities still operating in the United States—nearly 25,000 apparel manufacturing establishments—tend to be small or mid-sized, averaging 40 employees. Apparel companies also seldom produce their own goods, contracting out the various phases of garment production. Fabricated textile products such as home furnishings require less sewing and therefore less labor; manufacture of these products has been less likely to shift overseas.

The apparel and fabricated textiles sector reports the smallest amounts to TRI, and some of its industries have submitted no TRI forms, very few forms, or forms in some years and not others. This pattern is consistent with changes in the sector, particularly in relocating production outside the United States and shifting manufacturing operations from the northeast states to the south. Also, new owners may not report in the same ways or in the same SIC codes, when facilities change hands.



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Box 5-1. SIC Code 23, Apparel and Other Finished Products Made from Fabrics and Similar Materials: Codes and Classifications

SIC Code	Industry Description
231 Men's and Boy's Suits, Coats, and Overcoats	
2311 Men's and Boys' Suits, Coats, and Overcoats	Manufacture of men's and boys' tailored suits, coats, and overcoats from purchased woven or knit fabrics. Manufacture of uniforms (except athletic and work uniforms).
232 Men's and Boys' Furnishings, Work Clothing, and Allied Garments	
2321 Men's and Boys' Shirts, Except Work Shirts	Manufacture of men's and boys' shirts (including polo and sport shirts) from purchased woven or knit fabrics.
2322 Men's and Boys' Underwear and Nightwear	Manufacture of men's and boys' underwear and nightwear from purchased woven or knit fabrics.
2323 Men's and Boys' Neckwear	Manufacture of men's and boys' neckties, scarves, and mufflers from purchased woven or knit fabrics.
2325 Men's and Boys' Separate Trousers and Slacks	Manufacture of men's and boys' separate trousers and slacks from purchased woven or knit fabrics, including jeans, dungarees, and jean-cut casual slacks.
2326 Men's and Boys' Work Clothing	Manufacture of men's and boys' work shirts, workpants (excluding jeans and dungarees), other work clothing, and washable service apparel.
2329 Men's and Boys' Clothing, nec*	Manufacture of miscellaneous men's and boys' clothing (including athletic wear, down-filled clothing, nontailored jackets, sports clothing, swimsuits, and others) from purchased woven or knit fabrics.
233 Women's, Misses', and Juniors' Outerwear	
2331 Women's, Misses', and Juniors' Blouses and Shirts	Manufacture of women's, misses', and juniors' blouses and shirts from purchased woven or knit fabrics.
2335 Women's, Misses', and Juniors' Dresses	Manufacture of women's, misses', and juniors' dresses from purchased woven or knit fabrics.
2337 Women's, Misses', and Juniors' Suits, Skirts, and Coats	Manufacture of women's, misses', and juniors' suits, pantsuits, skirts, coats (except fur coats and raincoats), and tailored jackets and vests, from purchased woven or knit fabrics.
2339 Women's, Misses', and Juniors' Outerwear, nec*	Manufacture of miscellaneous women's, misses', and juniors' outerwear (including athletic uniforms, down-filled coats, jeans, scarves, slacks, swimsuits, and others), from purchased woven or knit fabrics.
234 Women's, Misses', Children's, and Infants' Undergarments	
2341 Women's, Misses', Children's, and Infants' Underwear and Nightwear	Manufacture of women's, misses', children's, and infants' underwear and nightwear from purchased woven or knit fabrics.
2342 Brassieres, Girdles, and Allied Garments	Manufacture of brassieres, girdles, and allied garments.
235 Hats, Caps, and Millinery	
2353 Hats, Caps, and Millinery	Manufacture of hats, caps, millinery, and hat bodies.
236 Girls', Children's, and Infants' Outerwear	
2361 Girls', Children's, and Infants' Dresses, Blouses, and Shirts	Manufacture of girls', children's, and infants' dresses, blouses, and shirts from purchased woven or knit fabrics.
2369 Girls', Children's, and Infants' Outerwear, nec*	Manufacture of miscellaneous girls', children's, and infants' outerwear from purchased woven or knit fabrics.
237 Fur Goods	
237 Fur Goods	Manufacture of fur coats and other clothing, accessories, and trimmings made of fur.
238 Miscellaneous Apparel and Accessories	
2381 Dress and Work Gloves, Except Knit and All-Leather	Manufacture of dress, semidress, and work gloves and mittens from purchased woven or knit materials, alone or combined with leather or plastics.
2384 Robes and Dressing Gowns	Manufacture of men's, boys', and women's robes and dressing gowns from purchased woven or knit fabrics.
2385 Waterproof Outerwear	Manufacture of raincoats and other waterproof outerwear from purchased rubberized fabrics, plastics, and similar materials. Manufacture of waterproof or water-repellant outerwear from purchased woven or knit fabrics other than wool.

*nec: not elsewhere classified; these are generally referred to as "miscellaneous" products in their categories.



Box 5-1. SIC Code 23, Apparel and Other Finished Products Made from Fabrics and Similar Materials: Codes and Classifications, Continued

SIC Code	Industry Description
238 Miscellaneous Apparel and Accessories, Continued	
2386 Leather and Sheep-Lined Clothing	Manufacture of leather and sheep-lined clothing.
2387 Apparel Belts	Manufacture of apparel belts of any material.
2389 Apparel and Accessories, nec*	Manufacture of suspenders, garters, handkerchiefs, and other miscellaneous apparel, including academic caps and gowns, vestments, and theatrical costumes. Manufacture of clothing by cutting and joining (for example, by adhesives) materials such as paper and nonwoven textiles.
239 Miscellaneous Fabricated Textile Products	
2391 Curtains and Draperies	Manufacture of curtains and draperies from purchased materials.
2392 Housefurnishings, Except Curtains and Draperies	Manufacture of housefurnishings, such as blankets, bedspreads, sheets, table cloths, towels, and shower curtains.
2393 Textile Bags	Manufacture of shipping and other industrial bags from purchased fabrics.
2394 Canvas and Related Products	Manufacture of awnings, tents, and related products from purchased fabrics.
2395 Pleating, Decorative and Novelty Stitching, and Tucking for the Trade	Pleating, decorative and novelty stitching, and tucking for the trade.
2396 Automotive Trimmings, Apparel Findings, and Related Products	Manufacture of automotive trimmings, apparel findings, and related products. Printing and stamping on fabric articles.
2397 Schiffli Machine Embroideries	Manufacture of Schiffli machine embroideries.
2399 Fabricated Textile Products, nec*	Manufacture of miscellaneous fabricated textile products, such as sleeping bags, banners, fabric belting, automobile tire and seat covers, non-disposable diapers, parachutes, automobile and aircraft seat belts, and others.

*nec: not elsewhere classified; these are generally referred to as "miscellaneous" products in their categories.

Although some products, such as fusing nonwoven textiles, may involve chemical and mechanical processes, the basic operations of this sector—cutting and sewing—are less likely to lead to releases and waste management of TRI chemicals. Some garments are prepared, dyed, and finished after assembly, but these are a small segment of overall production. Because processes such as these are usually performed as fabric is made, they are described in Chapter 4 (Textile Mill Products). Textile fabricating processes that are more associated with TRI reporting are printing,

stamping, and embossing fabrics and related materials. Solvents, dyes, and finishes applied in such processes account for the majority of TRI reporting in this sector.

1996 TRI Data for Apparel and Fabricated Textiles

Table 5-1 summarizes TRI reporting by the apparel and fabricated textiles sector for 1996. Of the 47 forms submitted in this sector, just two were

Sources

Executive Office of the President, Office of Management and Budget, *Standard Industrial Classification Manual*, 1987: Standard Industrial Classification (SIC) codes and industry descriptions.

U.S. Industry & Trade Outlook '98, DRI/McGraw Hill, Standard & Poor's, and U.S. Department of Commerce, International Trade Administration, 1998: economic analyses, also provides some information on environment and industrial processes for selected industries.

U.S. Census Bureau, *1996 Annual Survey of Manufactures: Statistics for Industry Groups and Industries*, M96(AS)-1, February 1998 <<http://www.census.gov/prod/www/titles.html#mm>>: value of shipments and employment.

Supplemental data from U.S. Census Bureau <<http://www.census.gov>> for some industries.

McGraw-Hill *Encyclopedia of Science and Technology*, 8th ed., 1997: industry process and technologies.



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Table 5-1. Summary of TRI Information by 4-digit SIC Code, 1996: Apparel and Fabricated Textiles, SIC Code 23

Total On- and Off-site Releases Rank	Total Production-related Waste Rank	SIC Code	Industry	Total Facilities Number	Total Forms Number	Form As Number	Total On-site Releases Pounds	Total Off-site Releases Pounds	Total On- and Off-site Releases Pounds
10	11	2321	Men's & Boys' Shirts	1	3	0	72	0	72
11	9	2325	Men's & Boys' Trousers & Slacks	1	1	0	2	0	2
7	8	2329	Men's & Boys' Clothing, nec*	2	2	0	24,400	7,872	32,272
9	7	2337	Women's & Misses' Suits & Coats	1	2	0	2,005	0	2,005
4	4	2353	Hats, Caps, & Millinery	3	7	0	145,138	0	145,138
6	6	2389	Apparel & Accessories, nec*	5	5	0	64,239	505	64,744
3	3	2392	Household Furnishings, nec*	1	3	0	176,205	0	176,205
8	10	2393	Textile Bags	1	2	0	9,610	500	10,110
1	1	2396	Automotive & Apparel Trimmings	6	14	2	508,761	42,600	551,361
5	5	2399	Fabricated Textile Products, nec*	3	4	0	69,597	11,700	81,297
2	2		Invalid SIC Code within SIC Code 23	1	4	0	252,495	0	252,495
			Total for SIC Code 23	25	47	2	1,252,524	63,177	1,315,701

Note: **On-site Releases** from Section 5 of Form R. **On-site Waste Management** from Section 8 of Form R. **Off-site Releases** from Section 6 (transfers off-site to disposal) of Form R. **Total Transfers Off-site for Further Waste Management** from Section 6 (excluding transfers off-site to disposal) of Form R. **Total Production-related Waste** sums Section 8 (Current Year, Column B) of Form R, except: **Non-production-related Waste** (remedial/catastrophic incidents).

*nec: not elsewhere classified.

Form A certification statements, certifying that a facility's total annual reportable amount of a TRI chemical was less than 500 pounds for the year and that the facility did not manufacture, process, or otherwise use more than 1 million pounds. (The Form A certification statement is explained in Chapter 1.)

The automotive and apparel trimmings industry (SIC code 2396) submitted 14 forms, the largest number of forms in this sector. Seven forms were submitted in the hats, caps, and millinery industry (SIC code 2353). Other industries in the sector filed five or fewer forms each. The automotive and apparel trimmings (SIC code 2396) industry dominated reporting of releases and production-related waste in this sector in 1996.

As shown in Table 5-1, the apparel and fabricated textiles sector reported 1.32 million pounds of total on- and off-site releases in 1996, including 1.25

million pounds of on-site releases. The automotive and apparel trimmings industry (SIC code 2396) reported 551,000 pounds of total releases in 1996, including 509,000 pounds on-site and 43,000 pounds off-site. Facilities reporting invalid SIC codes within SIC code 23 were second for reported releases with 252,000 pounds in both on-site releases and total releases. Miscellaneous household furnishings (SIC code 2392) was third for reported releases, with 176,000 pounds in both on-site releases and total releases. The industry that reported the second-largest off-site releases (transfers to disposal) was miscellaneous fabricated textile products (SIC code 2399) with 12,000 pounds, and the miscellaneous men's and boy's clothing industry (SIC code 2329) was third with 8,000 pounds of off-site releases.

The apparel and fabricated textiles sector reported 834,000 pounds of other on-site waste management in 1996, as well as 2.3 million pounds of total

One facility reported incorrectly under SIC code 23 for 1996. The correct SIC code is 26. Because this facility accounted for 30% or more of total releases, total other on-site waste management and total production-related waste in this sector, its forms have been omitted from all tables in this chapter. Therefore, the totals in the tables and figures in this chapter do not match the summary for SIC code 23 in Chapter 1. The incorrectly reported amounts were as follows: 549,149 on-site releases, 549,149 pounds total releases, 407,100 pounds total other on-site waste management and 950,700 pounds total production-related waste.



Table 5-1. Summary of TRI Information by 4-digit SIC Code, 1996: Apparel and Fabricated Textiles, SIC Code 23, Continued

SIC Code	Industry	Total Other On-site Waste Management Pounds	Total Transfers Off-site for Further Waste Management Pounds	Total Production-related Waste Pounds	Non-Production-related Waste Pounds
2321	Men's & Boys' Shirts	0	0	72	0
2325	Men's & Boys' Trousers & Slacks	19,915	0	19,917	0
2329	Men's & Boys' Clothing, nec*	0	978	33,250	0
2337	Women's & Misses' Suits & Coats	42,000	250	44,000	3
2353	Hats, Caps, & Millinery	0	64,058	209,196	0
2389	Apparel & Accessories, nec*	0	1,255	65,065	0
2392	Household Furnishings, nec*	47,864	0	224,069	0
2393	Textile Bags	0	0	9,935	0
2396	Automotive & Apparel Trimmings	712,587	59,152	1,320,758	0
2399	Fabricated Textile Products, nec*	0	16,190	132,040	0
	Invalid SIC Code within SIC Code 23	11,872	0	264,587	0
	Total for SIC Code 23	834,238	141,883	2,322,889	3

Note: **On-site Releases** from Section 5 of Form R. **On-site Waste Management** from Section 8 of Form R. **Off-site Releases** from Section 6 (transfers off-site to disposal) of Form R. **Total Transfers Off-site for Further Waste Management** from Section 6 (excluding transfers off-site to disposal) of Form R. **Total Production-related Waste** sums Section 8 (Current Year, Column B) of Form R, except: **Non-production-related Waste** (remedial/catastrophic incidents).

*nec: not elsewhere classified.

production-related waste. The automotive and apparel trimmings industry (SIC code 2396) reported the largest amounts of other on-site waste management, 713,000 pounds, and total production-related waste, 1.3 million pounds. Miscellaneous household furnishings (SIC code 2392) ranked second for both categories, reporting 48,000 pounds of other on-site waste management and 224,000 pounds of total production-related waste. Hats, caps, and millinery (SIC code 2353) ranked third for total production-related waste with 209,000 pounds, but women's and misses' suits and coats (SIC code 2337) ranked third for other on-site waste management with 42,000 pounds.

The apparel and fabricated textiles sector reported 142,000 pounds of transfers off-site for further

waste management in 1996. Of that amount, 64,000 pounds was reported in the hats, caps, and millinery industry (SIC code 2353). Another 59,000 pounds was reported in automotive and apparel trimmings (SIC code 2396).

None of the TRI forms received in this sector reported more than one SIC code within SIC code 23, as explained in Box 5-2.

On- and Off-site Releases

As shown in Table 5-3 and Figure 5-1, air emissions were by far the largest release type in the apparel and fabricated textiles sector. The sector's total of 1.32 million pounds of total on- and off-site releases included 1.25 million pounds of air emissions.

Box 5-2. Data Not Appearing in This Chapter

Facilities that engage in more than one kind of manufacturing activity may report more than one SIC code on their TRI forms to describe their activities. Most industrial sectors discussed in the *1996 TRI Public Data Release* include such "multiple-code" reporting. No forms were received, however, with multiple SIC codes within SIC code 23 in 1996. (Multiple code reporting is further explained in Box 1-5 in Chapter 1.)

This chapter, therefore, does not contain **Table 5-2. Multiple SIC Codes, 1996: Apparel and Fabricated Textiles, SIC Code 23.**

Industry-specific chapters in both volumes of the *1996 TRI Public Data Release* present comparable data tables, numbered consistently from chapter to chapter. The remaining tables and figures in this chapter conform to that numbering system.



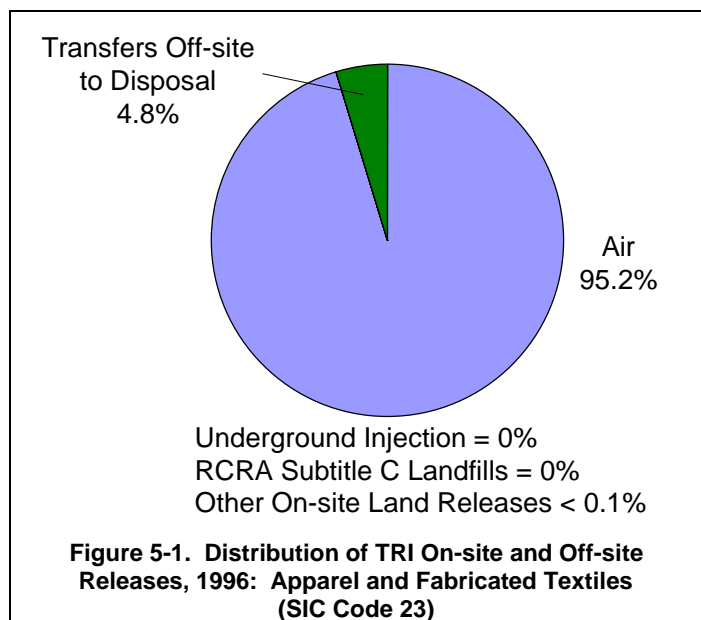
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Table 5-3. TRI On-site and Off-site Releases, 1996: Apparel and Fabricated Textiles, SIC Code 23 (in Rank Order)

SIC Code	Industry	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection		On-site Land Releases		Total On-site Releases Pounds	Off-site Releases Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
				Class I Wells Pounds	Class II-V Wells Pounds	RCRA Subtitle C Landfills Pounds	Other On-site Land Releases Pounds			
2396	Automotive & Apparel Trimmings	508,756	0	0	0	0	5	508,761	42,600	551,361
	Invalid SIC Code within SIC Code 23	252,495	0	0	0	0	0	252,495	0	252,495
2392	Household Furnishings, nec*	176,205	0	0	0	0	0	176,205	0	176,205
2353	Hats, Caps, & Millinery	145,138	0	0	0	0	0	145,138	0	145,138
2399	Fabricated Textile Products, nec*	69,597	0	0	0	0	0	69,597	11,700	81,297
2389	Apparel & Accessories, nec*	64,239	0	0	0	0	0	64,239	505	64,744
2329	Men's & Boys' Clothing, nec*	24,400	0	0	0	0	0	24,400	7,872	32,272
2393	Textile Bags	9,610	0	0	0	0	0	9,610	500	10,110
2337	Women's & Misses' Suits & Coats	2,005	0	0	0	0	0	2,005	0	2,005
2321	Men's & Boys' Shirts	72	0	0	0	0	0	72	0	72
2325	Men's & Boys' Trousers & Slacks	2	0	0	0	0	0	2	0	2
Total for SIC Code 23		1,252,519	0	0	0	0	5	1,252,524	63,177	1,315,701

Note: On-site Releases from Section 5 of Form R. Off-site Releases from Section 6 (off-site transfers to disposal) of Form R.

*nec: not elsewhere classified.



Note: On-site Releases from Section 5 of Form R. Off-site Releases from Section 6 (transfers off-site to disposal) of Form R.

Ranking first for total releases, the automotive and apparel trimmings industry (SIC code 2396) reported 509,000 pounds released to air, including 314,000 pounds of methyl ethyl ketone and 121,000 pounds of 1,1,1-trichlorethane, largely by one facility. This industry also reported 43,000 pounds of off-site releases.

Figure 5-2 shows the distribution of on- and off-site releases for the industries (four-digit SIC code) with the sector's largest releases.

Other On-site Waste Management

The majority of the 834,000 pounds of other on-site waste management reported in apparel and fabricated textiles for 1996 was on-site treatment—643,000 pounds. This sector also reported 191,000 pounds of on-site recycling. Table 5-4 and Figure 5-3 present the sector's other on-site waste management reporting.

The automotive and apparel trimmings industry (SIC code 2396) reported the largest amount of on-site treatment with 581,000 pounds, including 450,000 pounds of methyl ethyl ketone recycling reported by one facility.

The automotive and apparel trimmings industry also reported most of the sector's on-site recycling, 131,000 pounds out of 191,000 pounds for all apparel and fabricated textiles industries. This industry reported on-site recycling of 46,000 pounds of methyl ethyl ketone, 40,000 pounds of antimony compounds, and 33,000 pounds of phenol.

Figure 5-4 illustrates the distribution of on-site waste management reporting for the top industries in this sector.

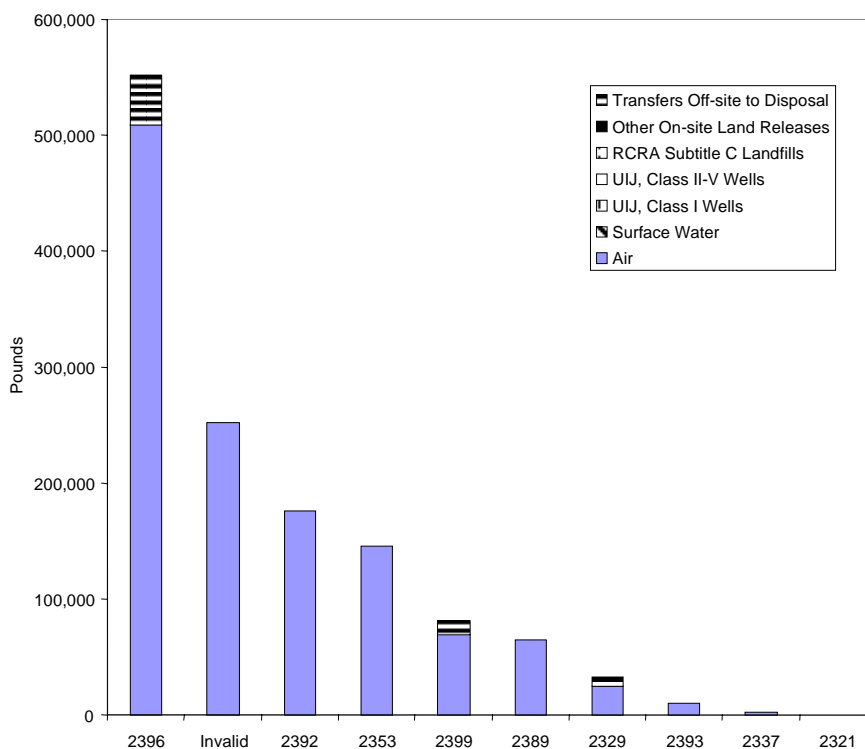


Figure 5-2. TRI On-site and Off-site Releases, SIC Codes with Largest Releases, 1996: Apparel and Fabricated Textiles (SIC Code 23)

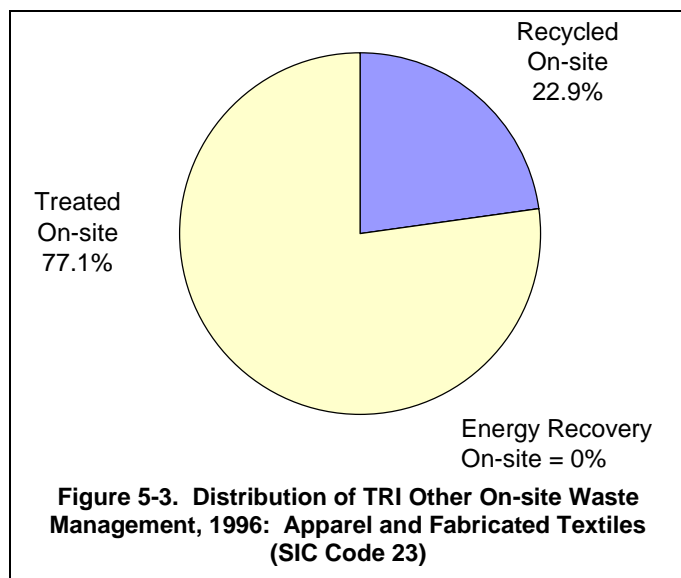
Note: On-site Releases from Section 5 of Form R. Off-site Releases from Section 6 (transfers off-site to disposal). UIJ = underground injection. Invalid SIC codes are codes beginning "23" that do not exist in the current Standard Industrial Classification code system.

Table 5-4. TRI Other On-site Waste Management, 1996: Apparel and Fabricated Textiles, SIC Code 23 (in Rank Order)

SIC Code	Industry	Recycled On-site Pounds	Energy Recovery On-site Pounds	Treated On-site Pounds	Total Other On-site Waste Management Pounds
2396	Automotive & Apparel Trimmings	131,240	0	581,347	712,587
2392	Household Furnishings, nec*	47,864	0	0	47,864
2337	Women's & Misses' Suits & Coats	0	0	42,000	42,000
2325	Men's & Boys' Trousers & Slacks	0	0	19,915	19,915
	Invalid SIC Code within SIC Code 23	11,872	0	0	11,872
2321	Men's & Boys' Shirts	0	0	0	0
2329	Men's & Boys' Clothing, nec*	0	0	0	0
2353	Hats, Caps, & Millinery	0	0	0	0
2389	Apparel & Accessories, nec*	0	0	0	0
2393	Textile Bags	0	0	0	0
2399	Fabricated Textile Products, nec*	0	0	0	0
	Total for SIC Code 23	190,976	0	643,262	834,238

Note: Other On-site Waste Management from Section 8 of Form R.

*nec: not elsewhere classified.

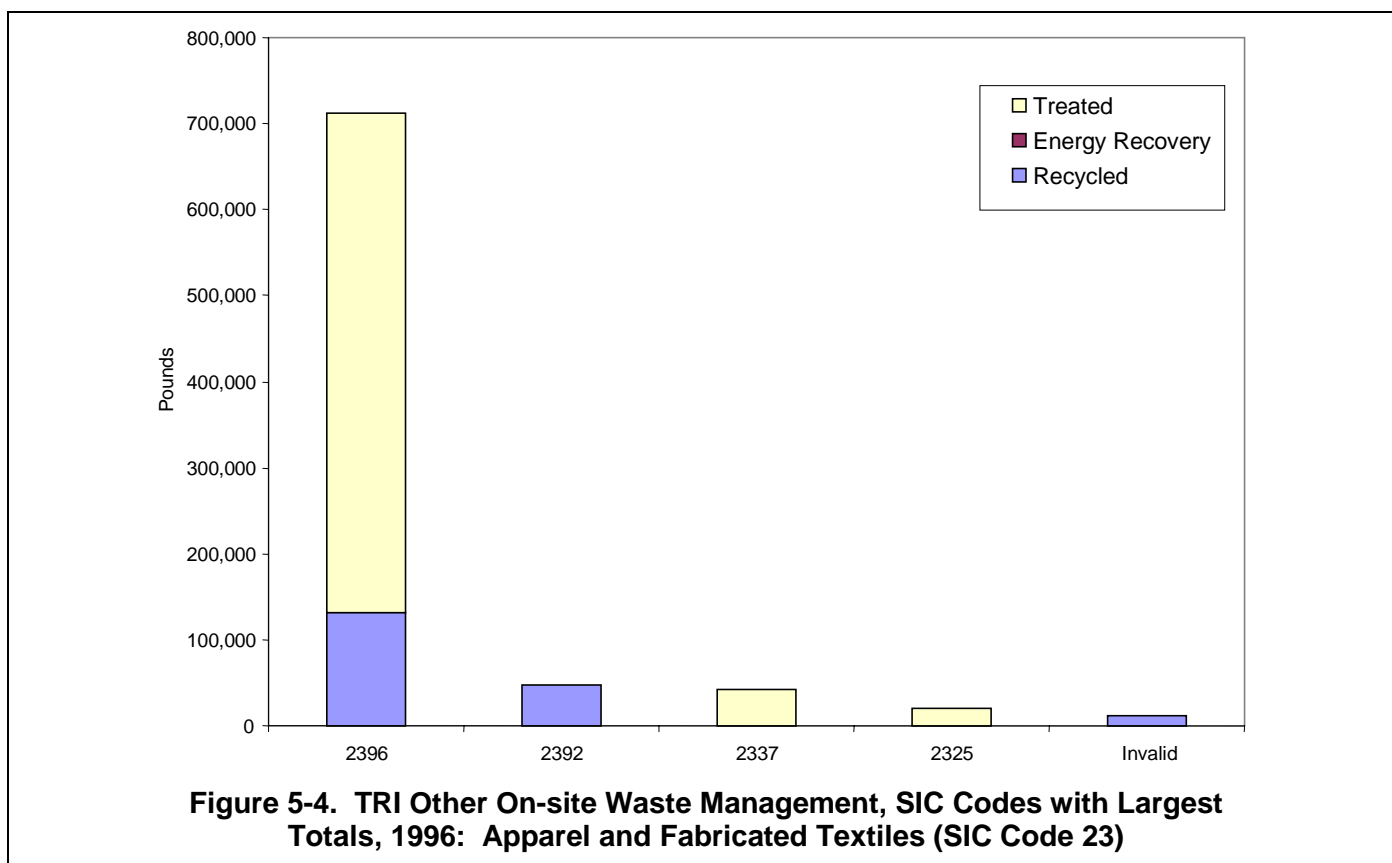


Note: Data from Section 8 of Form R.

Transfers Off-site for Further Waste Management

As shown in Table 5-5, the type of off-site transfer for further waste management with the largest amount reported in apparel and fabricated textiles was transfers to energy recovery. This category totaled 140,000 pounds, or 98.4% of the sector's total of 142,000 pounds for off-site transfers for further waste management. Figure 5-5 illustrates the dominance of this transfer type in the apparel and fabricated textiles sector's reporting.

The hats, caps, and millinery industry (SIC code 2353) reported the largest amounts in transfers to energy recovery, with 63,000 pounds. The automotive and apparel trimmings industry (SIC code 2396) ranked second with 59,000 pounds. In



Note: Other On-site Waste Management from Section 8 of Form R. Invalid SIC codes are codes beginning "23" that do not exist in the current Standard Industrial Classification code system.

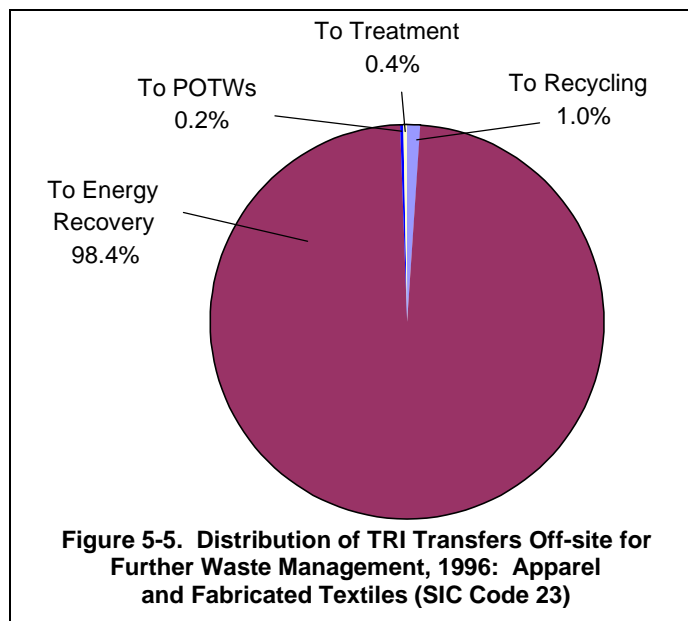


Table 5-5. TRI Transfers Off-site for Further Waste Management, 1996: Apparel and Fabricated Textiles, SIC Code 23 (in Rank Order)

SIC Code	Industry	Transfers to Recycling Pounds	Transfers to Energy Recovery Pounds	Transfers to Treatment Pounds	Transfers to POTWs Pounds	Other Off-site Transfers Pounds	Total Off-site Transfers for Further Waste Management Pounds
2353	Hats, Caps, & Millinery	754	63,304	0	0	0	64,058
2396	Automotive & Apparel Trimmings	0	59,152	0	0	0	59,152
2399	Fabricated Textile Products, nec*	0	16,185	0	5	0	16,190
2389	Apparel & Accessories, nec*	0	755	500	0	0	1,255
2329	Men's & Boys' Clothing, nec*	686	257	35	0	0	978
2337	Women's & Misses' Suits & Coats	0	0	0	250	0	250
2321	Men's & Boys' Shirts	0	0	0	0	0	0
2325	Men's & Boys' Trousers & Slacks	0	0	0	0	0	0
2392	Household Furnishings, nec*	0	0	0	0	0	0
2393	Textile Bags	0	0	0	0	0	0
	Invalid SIC Code within SIC Code 23	0	0	0	0	0	0
	Total for SIC Code 23	1,440	139,653	535	255	0	141,883

Note: Off-site Transfers for Further Waste Management from Section 6 (excluding off-site transfers to disposal) of Form R. Other Off-site Transfers are transfers reported without a valid waste management code.

*nec: not elsewhere classified.



Note: Transfers Off-site for Further Waste Management from Section 6 (excluding transfers off-site to disposal) of Form R.

the hats, caps, and millinery industry, methyl isobutyl ketone was the chemical with the largest reported transfers to energy recovery, with 55,000 pounds. In the automotive and apparel trimmings industry, methyl ethyl ketone was the chemical with the largest such transfers, with 51,000 pounds.

Figure 5-6 illustrates the distribution of off-site transfers for further waste management for the top industries in this sector.

1996 TRI Data by State for Apparel and Fabricated Textiles

In 1996, TRI forms reporting SIC codes in the apparel and fabricated textiles sector were submitted in 16 states, as listed in Table 5-6. Four states had more than 10% of the forms in this sector: Ohio with eight (17.0%), and Michigan and North Carolina with six (12.8%) each, and Pennsylvania with five (10.6%).

North Carolina reported the largest on-site releases and total on- and off-site releases in this sector, with 450,000 pounds in both categories. North Carolina also ranked second for transfers off-site for further waste management, with 57,000 pounds, and second for total production-related waste with 507,000 pounds.



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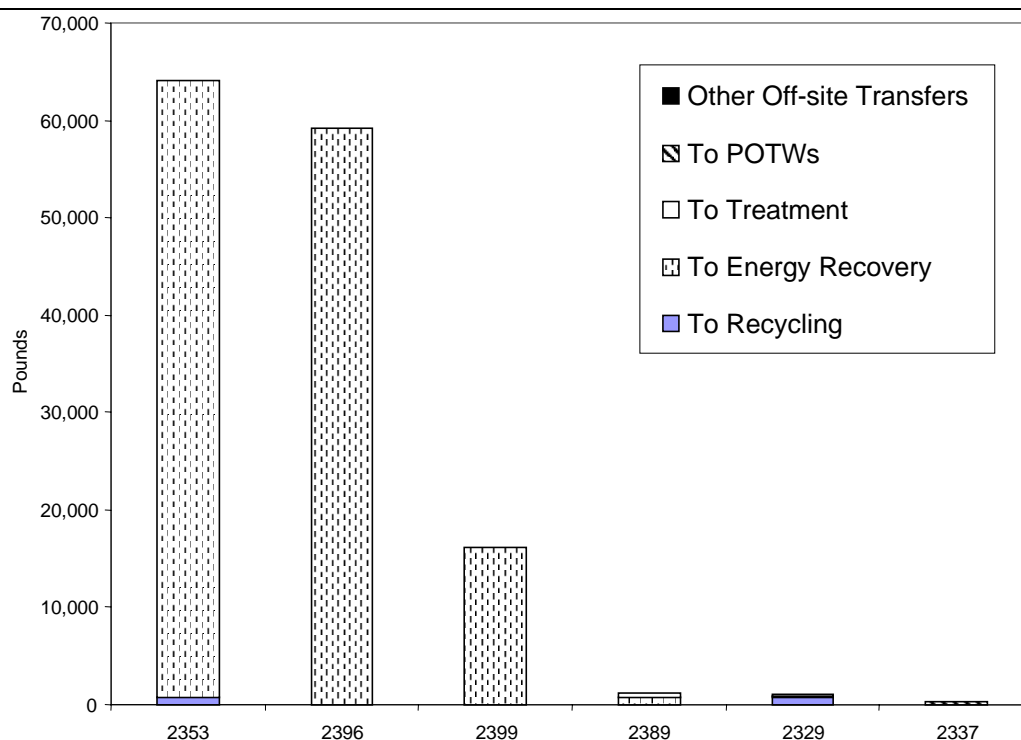


Figure 5-6. TRI Transfers Off-site for Further Waste Management, SIC Codes with Largest Totals, 1996: Apparel and Fabricated Textiles (SIC Code 23)

Note: Off-site Transfers for Further Waste Management from Section 6 (excluding off-site transfers to disposal) of Form R.

Table 5-6. Summary of TRI Information by State, 1996: Apparel and Fabricated Textiles, SIC Code 23

State	Total Facilities Number	Total Forms Number	Form As Number	Total On-site Releases Pounds	Total Off-site Releases Pounds	Total On- and Off-site Releases Pounds	Total Other On-site Waste Management Pounds	Total Transfers Off-site for Further Waste Management Pounds	Total Production-related Waste Pounds	Non-Production-related Waste Pounds
Alabama	1	2	0	2,005	0	2,005	42,000	250	44,000	3
Illinois	1	1	0	10,164	0	10,164	0	0	10,164	0
Indiana	1	1	0	0	0	0	0	686	686	0
Iowa	1	1	0	14,362	0	14,362	0	0	14,362	0
Kansas	1	1	0	0	0	0	38,347	0	38,347	0
Maine	1	1	0	16,375	255	16,630	0	1,255	17,191	0
Michigan	3	6	1	14,015	29,000	43,015	82,000	0	125,072	0
Missouri	1	4	0	252,495	0	252,495	11,872	0	264,587	0
New York	2	4	0	190,814	250	191,064	47,864	0	238,688	0
North Carolina	3	6	0	450,446	0	450,446	600	56,672	506,606	0
Ohio	3	8	1	87,225	14,100	101,325	591,640	2,480	693,985	0
Pennsylvania	3	5	0	42,030	11,700	53,730	0	759	54,484	0
Tennessee	1	1	0	12	0	12	0	0	10	0
Texas	2	4	0	103,110	0	103,110	19,915	63,304	186,329	0
Washington	1	1	0	24,400	7,872	32,272	0	292	32,564	0
Wisconsin	0	1	0	45,071	0	45,071	0	16,185	95,814	0
Total for SIC Code 23	25	47	2	1,252,524	63,177	1,315,701	834,238	141,883	2,322,889	3

Note: On-site Releases from Section 5 of Form R. On-site Waste Management from Section 8 of Form R. Off-site Releases from Section 6 (transfers off-site to disposal) of Form R. Total Transfers Off-site for Further Waste Management from Section 6 (excluding transfers off-site to disposal) of Form R. Total Production-related Waste sums Section 8 (Current Year, Column B) of Form R, except: Non-production-related Waste (remedial/catastrophic incidents). There may be forms but no facilities in a single state because a facility reported different 4-digit SIC codes in the range of SIC codes 20 to 39 on its individual forms.



The largest off-site releases (transfers to disposal) were reported in Michigan, which had 29,000 pounds in this category. Michigan was also the state with the second-largest amount reported for other on-site waste management, with 82,000 pounds.

Ohio reported the largest other on-site waste management, with 592,000 pounds, and the largest total production-related waste, with 694,000 pounds. Texas was the state with the largest amount reported for transfers off-site for further waste management, with 63,000 pounds.

Missouri ranked second for total on- and off-site releases, with 252,000 pounds, and third for total production-related waste, with 265,000 pounds. New York was third for both total releases (191,000 pounds) and other on-site waste management (48,000 pounds).

Map 5-1 illustrates the geographic distribution of total on- and off-site releases in the apparel and fabricated textiles sector.

1996 TRI Data by Chemical for Apparel and Fabricated Textiles

The 15 chemicals with the largest on- and off-site releases accounted for all but a tiny portion of the apparel and fabricated textiles sector's total reported releases in 1996, as shown in Table 5-7. Reported releases of these 15 chemicals totaled 1.3 million pounds, or 99.98% of the sector's total releases.

Methyl ethyl ketone ranked first with reported releases of 440,000 pounds. 1,1,1-Trichloroethane (TCA) was second with 249,000 pounds. Under the United States' implementation of the Montreal Protocol to reduce ozone-depleters, production of TCA, an ozone-depleting chemical, was banned effective January 1, 1996. One facility in the automotive and apparel trimmings industry (SIC

code 2396) reported 121,000 pounds of TCA air emissions for 1996. This facility projected releases of 20,000 pounds of TCA in 1997 and none in 1998. (Projected data for this sector are presented in "Projected Quantities of TRI Chemicals in Waste," later in this chapter. Facility projections are explained in Chapter 1.) Toluene was the third ranked chemical for on- and off-site releases, with 177,000 pounds.

The solvents reported in large amounts in this sector have uses in the cleaning and processing of textiles and fabrics or in fabric coatings. However, for most fabrics used in garment-making, these processes are generally conducted in the textile mills sector (SIC code 22). In the apparel and fabricated textiles sector, these chemicals are used in printing, stamping, and embossing fabric articles. Among these are automotive door and dashboard panels (automotive trimmings in SIC code 2396) and automotive tire and seat covers (miscellaneous fabricated textile products, SIC code 2399).

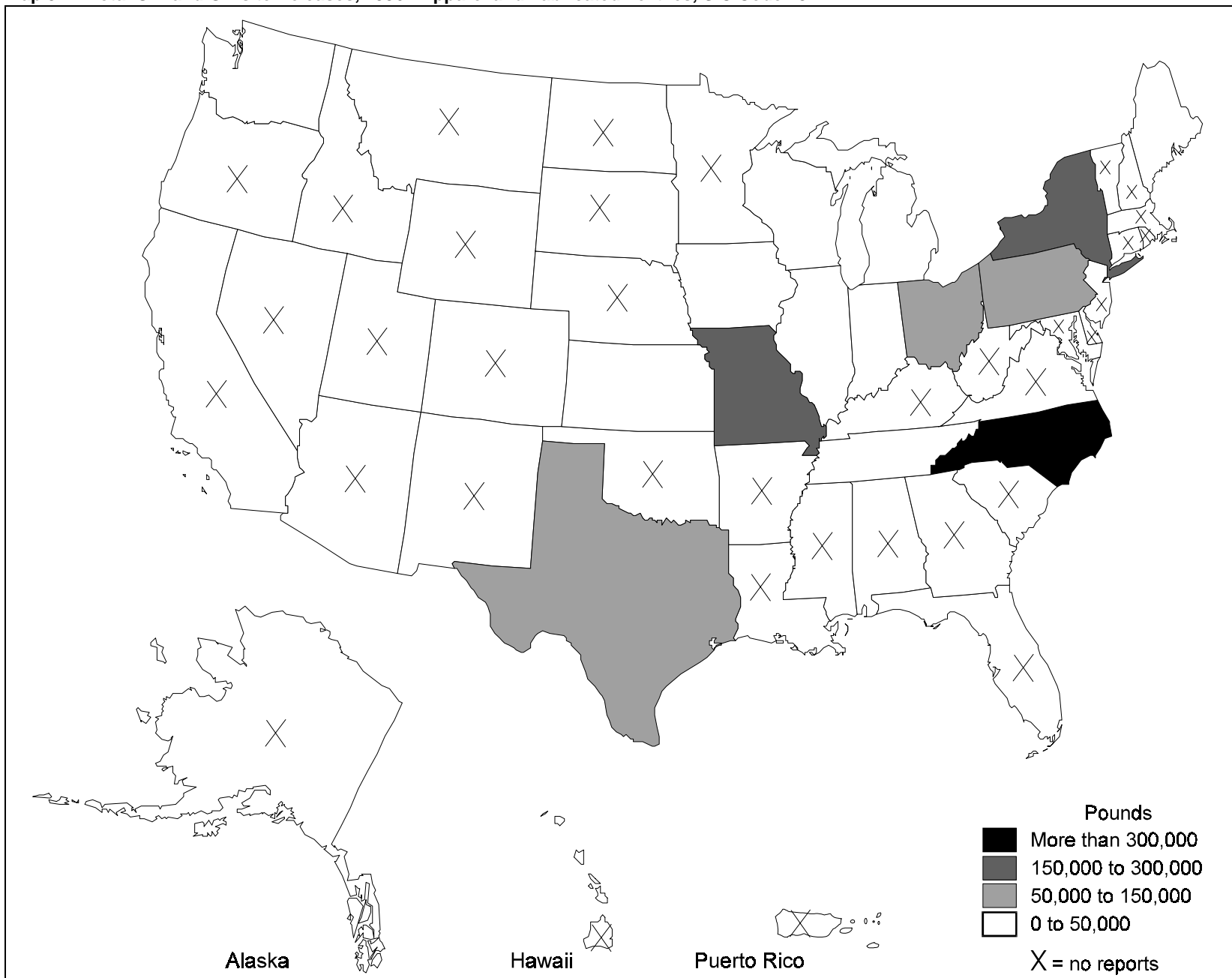
OSHA Carcinogens

In the apparel and fabricated textiles sector, on- and off-site releases of chemicals designated as OSHA carcinogens totaled 59,000 pounds in 1996, as shown in Table 5-8. (OSHA carcinogens and the bases for their designation appear in Box 1-9 in Chapter 1.) This was 4.5% of all reported releases in the sector for the year.

Miscellaneous apparel and accessories (SIC code 2389) reported 44,000 pounds of releases of OSHA carcinogens, the largest amount in this sector. The miscellaneous fabricated textiles products industry (SIC code 2399) reported releases of 14,000 pounds of OSHA carcinogens.

Two of the 15 chemicals with the largest total releases reported in this sector were OSHA carcinogens: dichloromethane with 59,000 pounds and formaldehyde with 500 pounds (see Table 5-7). One other OSHA carcinogen was also reported in this sector: toluene diisocyanate with 12 pounds of total releases.

Map 5-1. Total On- and Off-site Releases, 1996: Apparel and Fabricated Textiles, SIC Code 23



Note: On-site Releases from Section 5 of Form R and **Off-site Releases** from Section 6 (transfers off-site to disposal) of Form R.



Table 5-7. The 15 Chemicals with the Largest Total On-site and Off-site Releases, 1996: Apparel and Fabricated Textiles, SIC Code 23 (in Rank Order)

CAS Number	Chemical	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection		On-site Land Releases		Total On-site Releases Pounds	Off-site Releases Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
				Class I Wells Pounds	Class II-V Wells Pounds	RCRA Subtitle C Landfills Pounds	Other On-site Land Releases Pounds			
78-93-3	Methyl ethyl ketone	439,675	0	0	0	0	0	439,675	0	439,675
71-55-6	1,1,1-Trichloroethane	248,883	0	0	0	0	0	248,883	0	248,883
108-88-3	Toluene	176,357	0	0	0	0	0	176,357	255	176,612
108-10-1	Methyl isobutyl ketone	132,100	0	0	0	0	0	132,100	0	132,100
110-54-3	n-Hexane	84,180	0	0	0	0	0	84,180	0	84,180
75-09-2	Dichloromethane	58,596	0	0	0	0	0	58,596	250	58,846
67-56-1	Methanol	46,576	0	0	0	0	0	46,576	0	46,576
108-95-2	Phenol	4,848	0	0	0	0	5	4,853	29,000	33,853
1330-20-7	Xylene (mixed isomers)	24,400	0	0	0	0	0	24,400	7,872	32,272
--	Antimony compounds	319	0	0	0	0	0	319	23,700	24,019
7664-41-7	Ammonia	18,690	2,100	0	0	0	0	18,690	250	18,940
--	Diisocyanates	12,012	0	0	0	0	0	12,012	0	12,012
872-50-4	N-Methyl-2-pyrrolidone	5,273	0	0	0	0	0	5,273	0	5,273
--	Zinc compounds	66	0	0	0	0	0	66	1,600	1,666
50-00-0	Formaldehyde	500	0	0	0	0	0	500	0	500
	Subtotal	1,252,475	0	0	0	0	5	1,252,480	62,927	1,315,407
	Total for SIC Code 23	1,252,519	0	0	0	0	5	1,252,524	63,177	1,315,701

Note: On-site Releases from Section 5 of Form R. Off-site Releases from Section 6 (off-site transfers to disposal) of Form R.

Table 5-8. TRI On-site and Off-site Releases of OSHA Carcinogens by 4-digit SIC Code, 1996: Apparel and Fabricated Textiles, SIC Code 23 (in Rank Order)

SIC Code	Industry	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection		On-site Land Releases		Total On-site Releases Pounds	Off-site Releases Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
				Class I Wells Pounds	Class II-V Wells Pounds	RCRA Subtitle C Landfills Pounds	Other On-site Land Releases Pounds			
2389	Apparel & Accessories, nec*	44,234	0	0	0	0	0	44,234	250	44,484
2399	Fabricated Textile Products, nec*	14,362	0	0	0	0	0	14,362	0	14,362
2337	Women's & Misses' Suits & Coats	500	0	0	0	0	0	500	0	500
2321	Men's & Boys' Shirts	12	0	0	0	0	0	12	0	12
	Subtotal	59,108	0	0	0	0	0	59,108	250	59,358
	Total for SIC Code 23	1,252,519	0	0	0	0	5	1,252,524	63,177	1,315,701

Note: On-site Releases from Section 5 of Form R. Off-site Releases from Section 6 (off-site transfers to disposal) of Form R.

*nec: not elsewhere classified.

Figure 5-7 shows the on- and off-site releases of OSHA carcinogens by industries in the apparel and fabricated textiles sector.

1996 TRI Chemicals in Waste for Apparel and Fabricated Textiles

As shown in Table 5-9, most of the total production-related waste in the apparel and fabricated textiles sector for 1996 was reported as

released. Quantities released on- and off-site totaled 1.3 million pounds, or 57.7% of the sector's 2.3 million pounds of total production-related waste. Another 27.7% (643,000 pounds) was reported as treated on-site. The automotive and apparel trimmings industry (SIC code 2396) reported the largest quantities in both categories, with 549,000 pounds of releases and 581,000 pounds of on-site treatment.

Figure 5-8 displays the distribution of production-related waste in the apparel and fabricated textiles sector's 1996 reporting by waste



Chapter 5 — TRI Data for Apparel and Fabricated Textiles

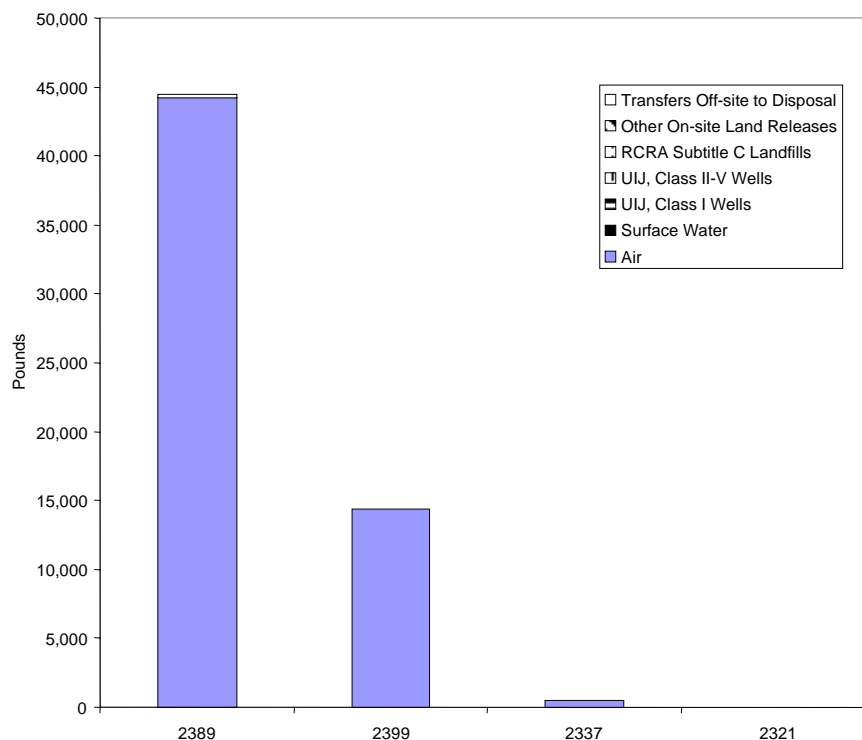


Figure 5-7. TRI On-site and Off-site Releases of OSHA Carcinogens, by SIC Code, 1996: Apparel and Fabricated Textiles (SIC Code 23)

Note: On-site Releases from Section 5 of Form R. Off-site Releases from Section 6 (off-site transfers to disposal) of Form R. UIJ = underground injection.

Table 5-9. Quantities of TRI Chemicals in Waste by 4-digit SIC Code, 1996: Apparel and Fabricated Textiles, SIC Code 23 (in Rank Order)

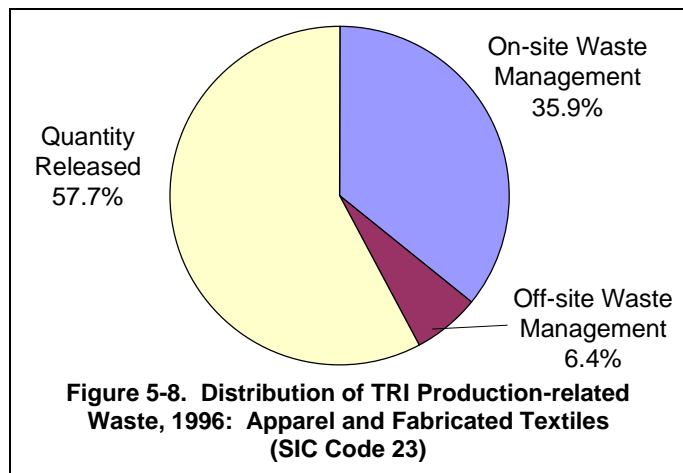
SIC Code	Industry	Recycled On-site Pounds	Energy Recovery On-site Pounds	Treated On-site Pounds	Recycled Off-site Pounds	Energy Recovery Off-site Pounds	Treated Off-site Pounds	Quantity Released On- and Off-site Pounds	Total Production-related Waste Pounds	Non-Production-related Waste Pounds
2396	Automotive & Apparel Trimmings	131,240	0	581,347	0	59,152	0	549,019	1,320,758	0
	Invalid SIC Code within SIC Code 23	11,872	0	0	0	0	0	252,715	264,587	0
2392	Household Furnishings, nec*	47,864	0	0	0	0	0	176,205	224,069	0
2353	Hats, Caps, & Millinery	0	0	0	754	63,304	0	145,138	209,196	0
2399	Fabricated Textile Products, nec*	0	0	0	0	16,185	0	115,855	132,040	0
2389	Apparel & Accessories, nec*	0	0	0	0	532	195	64,338	65,065	0
2337	Women's & Misses' Suits & Coats	0	0	42,000	0	0	0	2,000	44,000	3
2329	Men's & Boys' Clothing, nec*	0	0	0	686	257	7,907	24,400	33,250	0
2325	Men's & Boys' Trousers & Slacks	0	0	19,915	0	0	0	2	19,917	0
2393	Textile Bags	0	0	0	0	0	0	9,935	9,935	0
2321	Men's & Boys' Shirts	0	0	0	0	0	0	72	72	0
Total for SIC Code 23		190,976	0	643,262	1,440	139,430	8,102	1,339,679	2,322,889	3

Note: Data from Section 8 of Form R.

*nec: not elsewhere classified.



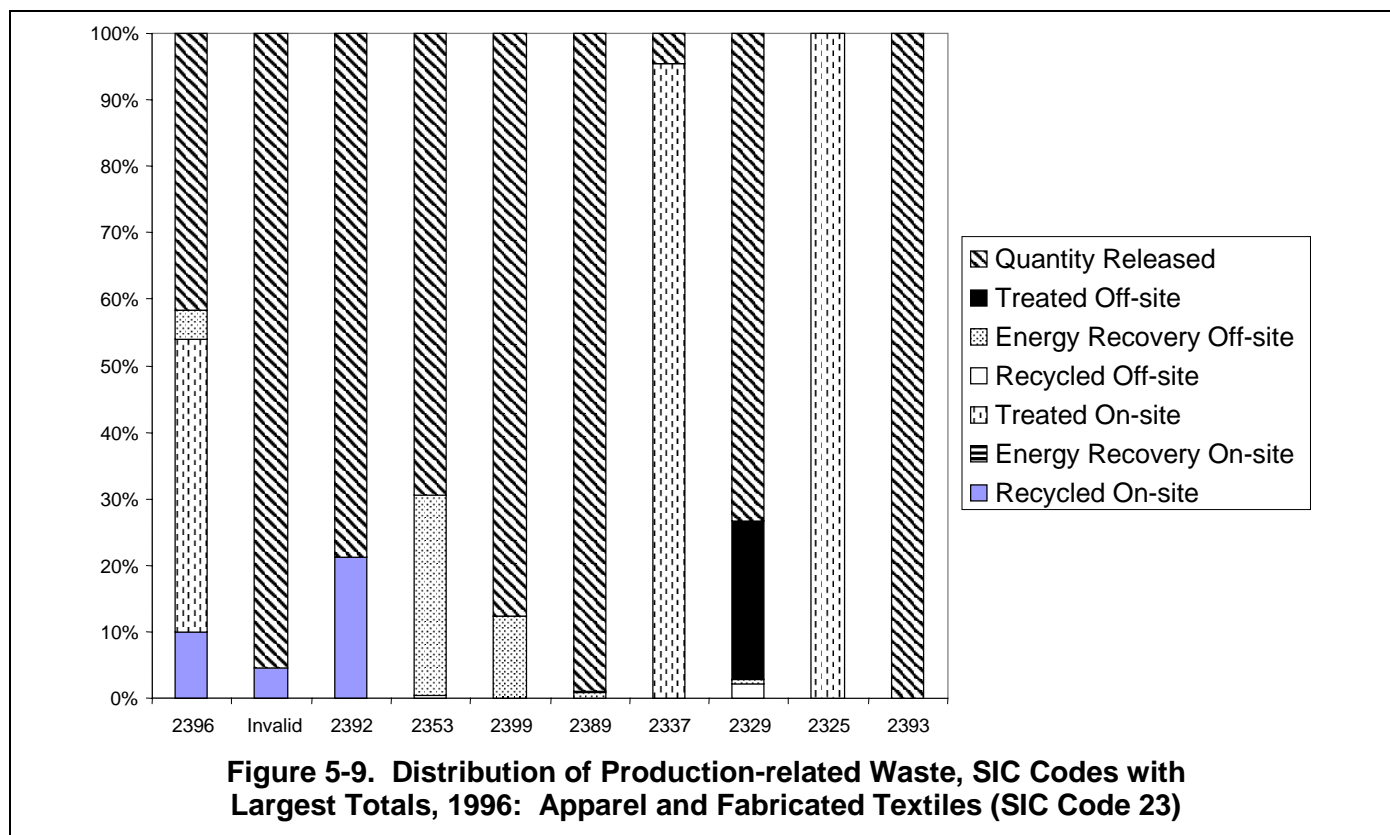
management option. Distribution of production-related waste for the top industries in the sector appears in Figure 5-9.



Note: Data from Section 8 of Form R.

Projected Quantities of TRI Chemicals in Waste

Projections by the apparel and fabricated textiles sector, presented in Table 5-10, show that quantities released on- and off-site were expected to decrease by 65.7%, or 880,000 pounds, through 1998. Decreases were projected for all categories including off-site treatment (43.3% or 3,500 pounds), on-site recycling (27.4% or 52,000 pounds) and off-site energy recovery (17.7% or 25,000 pounds). Overall, these reductions were expected to bring about a 42.9% decrease (997,000 pounds) in total production-related waste by 1998. (As explained in Chapter 1, facilities not only report current data but project waste management quantities for the next two years in their TRI submissions.) Figure 5-10 shows the sector's projected change in waste management through 1998.



Note: Data from Section 8 of Form R. Invalid SIC codes are codes beginning "23" that do not exist in the current Standard Industrial Classification code system.



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Table 5-10. Current Year and Projected Quantities of TRI Chemicals in Waste, 1996-1998: Apparel and Fabricated Textiles, SIC Code 23

Waste Management Activity	Current Year 1996		Projected 1997		Projected 1998	
	Total Pounds	Percent of Total	Total Pounds	Percent of Total	Total Pounds	Percent of Total
<u>On-site Waste Management</u>						
Recycled On-site	190,976	8.2	170,389	10.1	138,640	10.5
Energy Recovery On-site	0	0.0	0	0.0	0	0.0
Treated On-site	643,262	27.7	612,500	36.3	606,300	45.7
<u>Off-site Waste Management</u>						
Recycled Off-site	1,440	0.1	1,400	0.1	1,400	0.1
Energy Recovery Off-site	139,430	6.0	124,864	7.4	114,814	8.7
Treated Off-site	8,102	0.3	5,390	0.3	4,590	0.3
Quantity Released On- and Off-site	1,339,679	57.7	772,590	45.8	459,997	34.7
Total Production-related Waste for SIC Code 23	2,322,889	100.0	1,687,133	100.0	1,325,741	100.0

Waste Management Activity	Projected Change	Projected Change	Projected Change
	1996-1997 Percent	1997-1998 Percent	1996-1998 Percent
<u>On-site Waste Management</u>			
Recycled On-site	-10.8	-18.6	-27.4
Energy Recovery On-site	--	--	--
Treated On-site	-4.8	-1.0	-5.7
<u>Off-site Waste Management</u>			
Recycled Off-site	-2.8	0.0	-2.8
Energy Recovery Off-site	-10.4	-8.0	-17.7
Treated Off-site	-33.5	-14.8	-43.3
Quantity Released On- and Off-site	-42.3	-40.5	-65.7
Total Production-related Waste for SIC Code 23	-27.4	-21.4	-42.9

Note: Current year and projected year amounts are all taken from Section 8 of Form R for 1996.

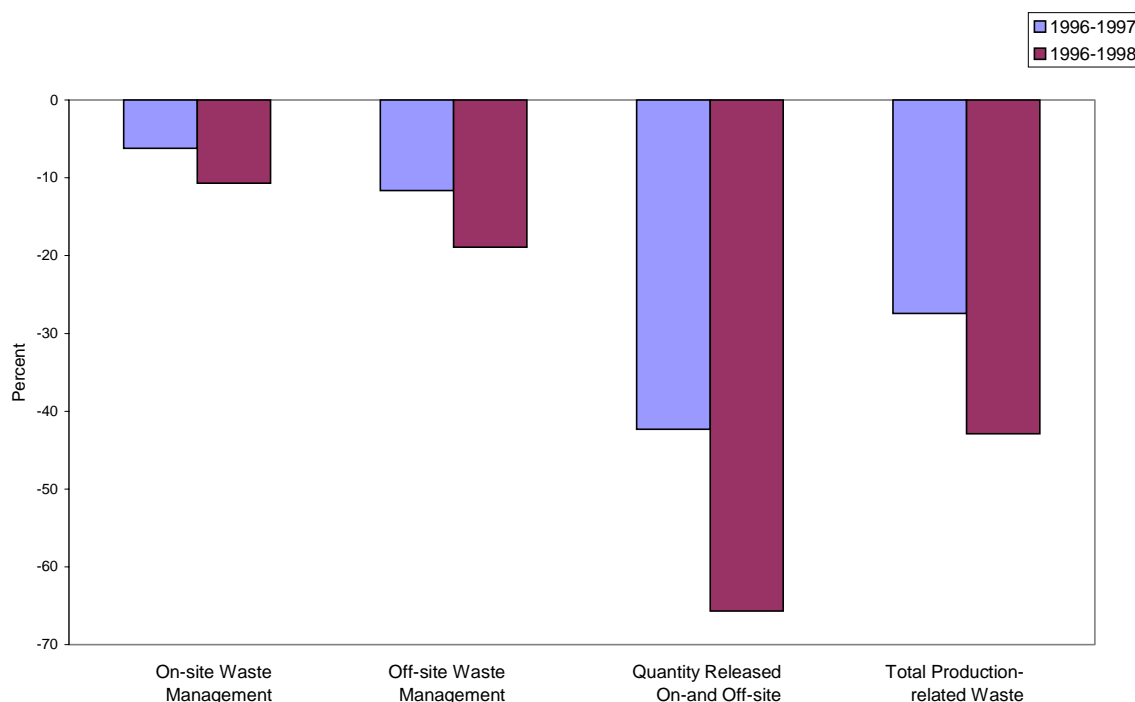


Figure 5-10. Projected Percentage Change in Quantities of TRI Chemicals in Waste, 1996-1998: Apparel and Fabricated Textiles (SIC Code 23)

Note: Current year and projected year amounts are all taken from Section 8 of Form R for 1996.

The effect of the projected reductions in the apparel and fabricated textiles sector's reporting would be to increase the role of on-site treatment in the sector's management of TRI chemicals in waste, from 27.7% of production-related waste in 1996 to 45.7% in 1998. At the same time, releases would decrease from 57.7% of production-related waste in 1996 to 34.7% in 1998. While this is still a high percentage for releases, the projected changes indicate improvement in the sector's waste management practices as measured by the waste management hierarchy, explained in Chapter 1. In that hierarchy of options, releases are the least environmentally desirable action. However, treatment is still a less preferred option, for environmental consequences, than recycling or energy recovery.

Source Reduction Activity

Approximately one-third (34.0%) of the forms submitted in the apparel and fabricated textiles

sector indicated that one or more source reduction activities was being implemented for that chemical in 1996. Seven of the 10 industries in the sector reported such activity. Six forms reported process modifications, and six forms reported raw materials modifications, the categories most likely to represent innovative source reduction projects. Table 5-11 presents these data.

Year-to-Year Comparisons for Apparel and Fabricated Textiles

1995-1996 TRI Data for Apparel and Fabricated Textiles

The number of forms submitted in the apparel and fabricated textiles sector was about the same in 1995 and 1996, increasing from 46 in 1995 to 47 in 1996, as shown in Table 5-12.



Table 5-11. Number of Forms Reporting Source Reduction Activity, 1996: Apparel and Fabricated Textiles, SIC Code 23

SIC Code	Industry	Total Forms Number	Forms Reporting Source Reduction Activities		Category of Source Reduction Activity							
			Number	Percent of All Forms Percent	Good Operating Practices Number	Inventory Control Number	Spill and Leak Prevention Number	Raw Material Modifications Number	Process Modifications Number	Cleaning and Degreasing Number	Surface Preparation and Finishing Number	Product Modifications Number
2321	Men's & Boys' Shirts	3	3	100.0	0	3	0	0	0	0	0	0
2325	Men's & Boys' Trousers & Slacks	1	0	0.0	0	0	0	0	0	0	0	0
2329	Men's & Boys' Clothing, nec*	2	0	0.0	0	0	0	0	0	0	0	0
2337	Women's & Misses' Suits & Coats	2	2	100.0	2	0	2	0	2	0	0	0
2353	Hats, Caps, & Millinery	7	3	42.9	1	0	0	1	1	1	0	0
2389	Apparel & Accessories, nec*	5	1	20.0	0	0	0	1	0	0	0	0
2392	Household Furnishings, nec*	3	3	100.0	0	0	0	3	0	0	0	0
2393	Textile Bags	2	0	0.0	0	0	0	0	0	0	0	0
2396	Automotive & Apparel Trimmings	14	3	21.4	0	0	0	1	2	0	0	0
2399	Fabricated Textile Products, nec*	4	1	25.0	0	0	0	0	1	0	0	0
	Invalid SIC Code within SIC Code 23	4	0	0.0	0	0	0	0	0	0	0	0
	Total for SIC Code 23	47	16	34.0	3	3	2	6	6	1	0	0

*nec: not elsewhere classified.

On- and Off-site Releases

The sector's reported on- and off-site releases for 1995 and 1996 also appear in Table 5-12. Total releases increased slightly from 1.29 million pounds to 1.32 million pounds. On-site releases in the apparel and fabricated textiles sector decreased by 7,000 pounds from 1995 to 1996.

Off-site releases (transfers to disposal) reported in the apparel and fabricated textiles sector more than doubled from 1995 to 1996, from 28,000 pounds to 63,000 pounds.

Figure 5-11 illustrates the sector's change in releases for 1995-1996 in percentage terms.

Other On-site Waste Management

Amounts of other on-site waste management reported in the apparel and fabricated textiles sector increased from 640,000 pounds in 1995 to 834,000 pounds in 1996, as shown in Table 5-12. The change from 1995 to 1996 was an increase of 195,000 pounds or 30.4%, occurring in both on-site treatment and on-site recycling.

Transfers Off-site for Further Waste Management

Table 5-12 also presents the sector's 1995-1996 data for transfers off-site for further waste management. Such transfers decreased from 170,000 pounds to 142,000 pounds in this period, a 16.7% reduction. This represented a substantial drop in transfers to treatment (99.1%, or 60,000 pounds), partly offset by an increase in transfers to energy recovery (30.9%, or 33,000 pounds).

Changes in SIC Codes

As indicated in facility descriptions below, some facilities report different SIC codes over time. This may reflect new or discontinued lines of production, or it may represent a different understanding of how SIC code designations relate to a facility's business activities. These changes can contribute—sometimes largely—to apparent increases or decreases across comparison years in the amounts reported by the four-digit, or even two-digit, SIC codes.



Table 5-12. Comparison of TRI On-site and Off-site Releases, Other On-site Waste Management, and Transfers Off-site for Further Waste Management, 1995-1996: Apparel and Fabricated Textiles, SIC Code 23

	1995 Number	1996 Number	Change 1995 to 1996 Percent
Total Facilities	23	25	8.7
Total Forms	46	47	2.2
Form Rs	45	45	0.0
Form As	1	2	100.0
	Pounds	Pounds	Percent
<u>On-site Releases</u>			
Total Air Emissions	1,258,927	1,252,519	-0.5
Fugitive Air	81,334	128,987	58.6
Point Source Air	1,177,593	1,123,532	-4.6
Surface Water Discharges	5	0	-100.0
Underground Injection	0	0	--
On-site Land Releases	250	5	-98.0
Total On-site Releases	1,259,024	1,252,524	-0.5
<u>Off-site Releases</u>			
Transfers Off-site to Disposal	27,842	63,177	126.9
Total On- and Off-site Releases	1,287,024	1,315,701	2.2
<u>Other On-site Waste Management</u>			
Recycled On-site	138,311	190,976	38.1
Energy Recovery On-site	0	0	--
Treated On-site	501,405	643,262	28.3
Total Other On-site Waste Management	639,716	834,238	30.4
<u>Transfers Off-site for Further Waste Management</u>			
Transfers to Recycling	3,021	1,440	-52.3
Transfers to Energy Recovery	106,707	139,653	30.9
Transfers to Treatment	60,300	535	-99.1
Transfers to POTWs	255	255	0.0
Other Off-site Transfers	0	0	--
Total Transfers Off-site for Further Waste Management	170,283	141,883	-16.7

Note: **On-site Releases** from Section 5 of Form R and **Off-site Releases** from Section 6 (transfers off-site to disposal) of Form R. **Other On-site Waste Management** from Section 8 of Form R. **Transfers Off-site for Further Waste Management** from Section 6 (excluding transfers off-site to disposal) of Form R. Breakdown of Underground Injection and On-site Land Releases not required in 1995. Other Off-site Transfers are transfers reported without a valid waste management code.

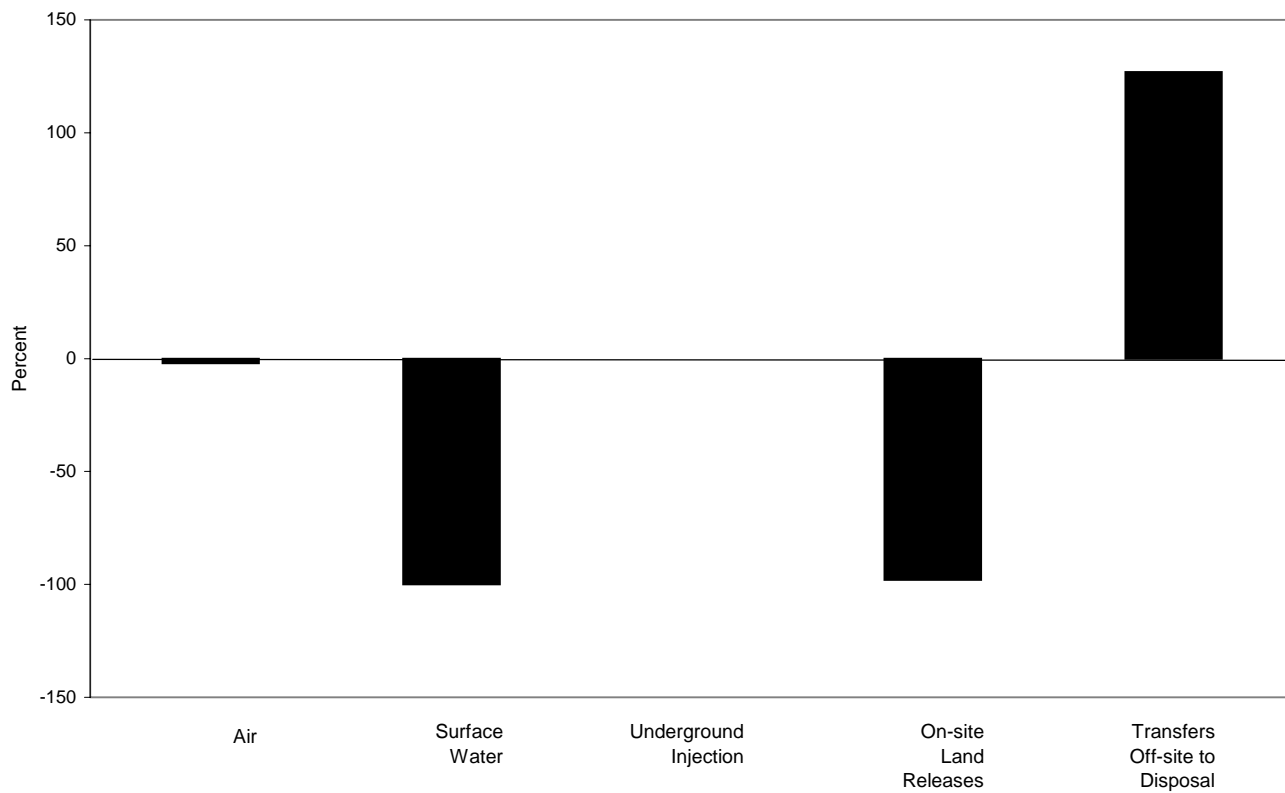


Figure 5-11. Percentage Change in On-site and Off-site Releases, 1995-1996: Apparel and Fabricated Textiles (SIC Code 23)

Note: On-site Releases from Section 5 of Form R and Off-site Releases from Section 6 (transfers off-site to disposal) of Form R. Breakdown of Underground Injection and On-site Land Releases not required in 1995.

1988-1996 TRI Data for Apparel and Fabricated Textiles

Reporting by four-digit SIC codes in this sector reflects the level of economic change that has characterized the apparel trades in the last decade. In a number of industries, TRI forms have been filed in only one or two of the years shown in these tables (1988 and 1994-1996). These may represent plant closures, relocation of operations in other parts of the United States or abroad, changes in product lines, reinterpretation of SIC codes when facility ownership changes, or reporting errors in earlier years. In several categories of data reported to TRI, the largest changes result from amounts reported in 1988 and “no reports received” in later years or vice versa.

As explained in Chapter 1, comparisons from the 1988 TRI baseline year to the current year rely on the list of “core” TRI chemicals that were reportable, with the same reporting definition, in all years. These multi-year comparisons also review only the data elements that were collected in all years, which excludes from this section any analysis that distinguishes RCRA subtitle C landfills from other land releases as well as analysis based on the types of underground injection wells. On-site waste management data and transfers off-site to recycling and to energy recovery have been collected only since 1991; these data are included, but cannot be compared across the full 1988-1996 period.

The number of forms for “core” chemicals decreased from 45 forms in 1988 to 37 forms in



1996 in the apparel and fabricated textiles sector, as shown in Table 5-13.

Total on- and off-site releases reported in this sector increased from 1.0 million pounds in 1988 to 1.2 million pounds in 1996, an increase of 16.5%. This change arose from increased reporting of point source air emissions, from 620,000 pounds in 1988 to 1.0 million pounds in 1996. Small decreases, of about 40,000 pounds each, were reported in on-site land releases and in off-site releases (transfers to disposal).

Figure 5-12 illustrates percentage change in on- and off-site releases from 1988 to 1996 for this sector.

On-site waste management and transfers off-site for recycling or energy recovery were not collected in 1988. Table 5-13 presents these data for recent years. For this sector, other on-site waste management increased from 739,000 pound in 1994 to 781,000 pounds in 1996. This included a 97,000-pound increase in on-site treatment, partly offset by a 56,000-pound decrease in on-site recycling.

Off-site transfers to treatment and to POTWs decreased by nearly 100% from 1988 to 1996 in the apparel and fabricated textiles sector's reporting, as shown in Table 5-13.

1988-1996 Data for Four-Digit Industries in Apparel and Fabricated Textiles

Tables 5-14 through 5-16 summarize data for 1988 and 1994-1996 for industries at the four-digit SIC code level within SIC code 23. The tables present, respectively, on- and off-site releases, other on-site waste management, and transfers off-site for further waste management.

On- and Off-site Releases

Table 5-14 provides release data for all four-digit SIC codes in the apparel and fabricated textiles sector for 1988-1996.

The largest decrease in on- and off-site releases in this sector resulted from reporting of 98,000 pounds of air emissions in the pleating and stitching industry (SIC code 2395) in 1988 and no forms filed in this industry in 1996. Forms were submitted in all comparison years on Table 5-14 in the miscellaneous apparel and accessories industry (SIC code 2389), which had the second largest decrease. This was a reduction of 97,000 pounds in air emissions and total releases from 1988 to 1996. All other net decreases for 1988-1996 in this sector represented forms filed in 1988 with none submitted in 1996.

The largest increase in total releases reported in this sector was in automotive and apparel trimmings (SIC code 2396), from 247,000 pounds in 1988 to 537,000 pounds in 1996. Miscellaneous household furnishings (SIC code 2392) ranked second for 1988-1996 increase in releases, reporting 250 pounds in 1988 and 176,000 pounds in 1996. The industry with the third-largest increase in reported releases was miscellaneous fabricated textiles (SIC code 2399). This industry reported 750 pounds in 1988 and 81,000 pounds in 1996. Increases in all three industries were attributable to air emissions.

Other On-site Waste Management

The women's and misses' suits and coats industry (SIC code 2337) reported the largest 1994-1996 decrease in other on-site waste management (on-site waste management data were not collected in 1988). This industry reported 109,000 pounds in 1994 and 42,000 pounds in 1996, entirely in on-site treatment. Schiffli machine embroideries (SIC code 2397) reported 39,000 pounds of on-site treatment in 1994; no reports were filed in this industry in 1996. The next-largest 1994-1996 reduction was reported in miscellaneous apparel and accessories (SIC code 2389), from 31,000 pounds to zero (forms submitted with zero amounts in on-site waste management categories).



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Table 5-13. Comparison of TRI On-site and Off-site Releases, Other On-site Waste Management, and Transfers Off-site for Further Waste Management, 1988 and 1994-1996: Apparel and Fabricated Textiles, SIC Code 23

	1988 Number	1994 Number	1995 Number	1996 Number	Change 1988 to 1996 Percent
Total Facilities	31	33	24	22	-29.0
Total Forms	45	56	41	37	-17.8
Form Rs	45	56	41	36	-20.0
Form As	NA	NA	0	1	NA
	Pounds	Pounds	Pounds	Pounds	Percent
<u>On-site Releases</u>					
Total Air Emissions	881,030	1,311,246	1,231,889	1,132,350	28.5
Fugitive Air	260,793	271,594	73,546	97,960	-62.7
Point Source Air	620,237	1,039,652	1,158,343	1,035,190	66.9
Surface Water Discharges	250	3	5	0	-100.0
Underground Injection	0	0	0	0	--
On-site Land Releases	40,849	25	250	5	-100.0
Total On-site Releases	922,129	1,311,274	1,232,144	1,132,355	22.8
<u>Off-site Releases</u>					
Transfers Off-site to Disposal	103,568	69,673	27,842	62,927	-39.2
Total On- and Off-site Releases	1,025,697	1,380,947	1,259,986	1,195,282	16.5
<u>Other On-site Waste Management</u>					
Recycled On-site	NA	245,936	138,311	190,376	NA
Energy Recovery On-site	NA	0	0	600	NA
Treated On-site	NA	493,412	501,405	590,347	NA
Total Other On-site Waste Management	NA	739,348	639,716	780,723	NA
<u>Transfers Off-site for Further Waste Management</u>					
Transfers to Recycling	NA	88,230	3,021	1,440	NA
Transfers to Energy Recovery	NA	125,515	103,627	136,573	NA
Transfers to Treatment	45,425	121,699	60,050	535	-98.8
Transfers to POTWs	276,730	2,636	255	255	-99.9
Other Off-site Transfers	5,351	0	0	0	-100.0
Total Transfers Off-site for Further Waste Management	NA	338,080	166,953	138,803	NA

Note: Does not include delisted chemicals, chemicals added in 1990, 1991, 1994, and 1995, and aluminum oxide, ammonia, hydrochloric acid, and sulfuric acid. **On-site Releases** from Section 5 of Form R and **Off-site Releases** from Section 6 (transfers off-site to disposal) of Form R. **Other On-site Waste Management** from Section 8 of Form R. **Transfers Off-site for Further Waste Management** from Section 6 (excluding transfers off-site to disposal) of Form R. Breakdown of Underground Injection and On-site Land Releases not required before 1996. For 1994-1996, Other Off-site Transfers are transfers reported without a valid waste management code. For 1988, Other Off-site Transfers are transfers reported without a valid waste management code or codes not required to be reported in 1988. **NA:** not required to be reported in that year.

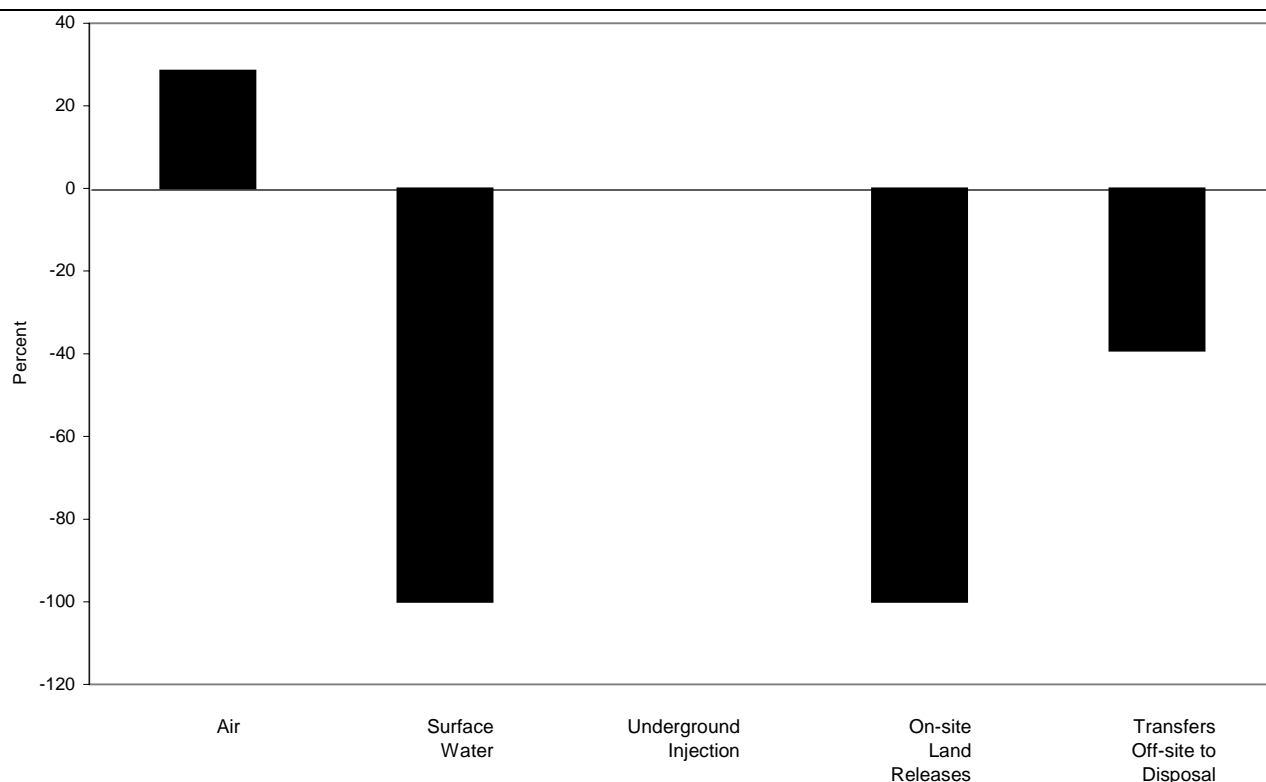


Figure 5-12. Percentage Change in On-site and Off-site Releases, 1988-1996: Apparel and Fabricated Textiles (SIC Code 23)

Note: Does not include delisted chemicals, chemicals added in 1990, 1991, 1994, and 1995, and aluminum oxide, ammonia, hydrochloric acid, and sulfuric acid. **On-site Releases** from Section 5 of Form R and **Off-site Releases** from Section 6 (transfers off-site to disposal) of Form R. Breakdown of Underground Injection and On-site Land Releases not required before 1996.

The two industries with the largest increases in other on-site waste management for 1994 to 1996 were the same as those with the largest increases in total releases for 1988 to 1996: automotive and apparel trimmings (SIC code 2396), with 493,000 pounds in 1994 and 679,000 pounds in 1996, and miscellaneous household furnishings (SIC code 2392), with 44,000 pounds in 1994 and 48,000 pounds in 1996. The reported increases occurred in on-site treatment for automotive and apparel trimmings industry and in on-site recycling for the household furnishings industry.

On-site waste management data for 1994-1996 appear in Table 5-15.

Transfers Off-site for Further Waste Management

The hats, caps, and millinery industry (SIC code 2353) had the largest decrease in transfers off-site for further waste management reported for 1994-1996 in the apparel and fabricated textiles sector (data for some types of off-site transfers were not collected in 1988). This industry reported 72,000 pounds in 1994 and 64,000 pounds in 1996; an increase in transfers to energy recovery was more than offset by reductions in transfers to recycling and treatment. The fur goods industry (SIC code 2371), ranking second for decreases, had 6,000 pounds of transfers off-site for further waste management in 1994, mostly in transfers to



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Table 5-14. TRI On-site and Off-site Releases by 4-digit SIC Code, 1988 and 1994-1996: Apparel and Fabricated Textiles, SIC Code 23

SIC Code	Industry	Year	On-site Releases				Total On-site Releases Pounds	Off-site Releases	Total On- and Off-site Releases Pound
			Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds		Transfers Off-site to Disposal Pounds	
2321	Men's & Boys' Shirts	96	60	0	0	0	60	0	60
		95	20	0	0	0	20	0	20
		94	No reports received						
		88	No reports received						
2322	Men's & Boys' Underwear & Nightwear	96	No reports received						
		95	No reports received						
		94	10	1	0	20	31	0	31
		88	19,361	0	0	0	19,361	0	19,361
2326	Men's & Boys' Work Clothing	96	No reports received						
		95	No reports received						
		94	No reports received						
		88	50	0	0	0	50	11,441	11,491
2329	Men's & Boys' Clothing, nec*	96	24,400	0	0	0	24,400	7,872	32,272
		95	37,407	0	0	0	37,407	7,742	45,149
		94	42,997	0	0	0	42,997	0	42,997
		88	0	0	0	0	0	9,943	9,943
2337	Women's & Misses' Suits & Coats	96	2,005	0	0	0	2,005	0	2,005
		95	4,055	0	0	0	4,055	0	4,055
		94	5,355	0	0	0	5,355	0	5,355
		88	No reports received						
2341	Women's & Children's Underwear	96	No reports received						
		95	No reports received						
		94	No reports received						
		88	22,200	0	0	0	22,200	0	22,200
2353	Hats, Caps, & Millinery	96	145,138	0	0	0	145,138	0	145,138
		95	237,956	0	0	0	237,956	0	237,956
		94	346,903	0	0	0	346,903	0	346,903
		88	70,100	0	0	0	70,100	11,899	81,999
2371	Fur Goods	96	No reports received						
		95	No reports received						
		94	40,412	0	0	0	40,412	0	40,412
		88	No reports received						
2381	Fabric Dress & Work Gloves	96	No reports received						
		95	No reports received						
		94	No reports received						
		88	8,900	0	0	0	8,900	0	8,900
2385	Waterproof Outerwear	96	No reports received						
		95	No reports received						
		94	No reports received						
		88	2,000	0	0	0	2,000	0	2,000

Note: On-site Releases from Section 5 of Form R and **Off-site Releases** from Section 6 (transfers off-site to disposal) of Form R. Forms with more than one 4-digit SIC code within SIC code 23 are assigned to the "multiple" category.

*nec: not elsewhere classified.



Table 5-14. TRI On-site and Off-site Releases by 4-digit SIC Code, 1988 and 1994-1996: Apparel and Fabricated Textiles, SIC Code 23, Continued

SIC Code	Industry	Year	On-site Releases				Total On-site Releases Pounds	Off-site Releases	Total On- and Off-site Releases Pounds
			Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds		Transfers Off-site to Disposal Pounds	
2386	Leather & Sheep-lined Clothing	96	No reports received						
		95	No reports received						
		94	No reports received						
		88	43,120	0	0	0	43,120	0	43,120
2389	Apparel & Accessories, nec*	96	64,239	0	0	0	64,239	505	64,744
		95	77,687	0	0	0	77,687	250	77,937
		94	83,857	0	0	0	83,857	0	83,857
		88	161,302	0	0	250	161,552	85	161,637
2392	Household Furnishings, nec*	96	176,205	0	0	0	176,205	0	176,205
		95	174,580	0	0	0	174,580	0	174,580
		94	149,694	0	0	0	149,694	0	149,694
		88	250	0	0	0	250	0	250
2393	Textile Bags	96	10	0	0	0	10	250	260
		95	10	0	0	0	10	0	10
		94	10	0	0	0	10	0	10
		88	No reports received						
2394	Canvas & Related Products	96	No reports received						
		95	0	0	0	0	0	0	0
		94	10	0	0	0	10	0	10
		88	No reports received						
2395	Pleating & Stitching	96	No reports received						
		95	No reports received						
		94	No reports received						
		88	98,062	0	0	0	98,062	0	98,062
2396	Automotive & Apparel Trimmings	96	494,381	0	0	5	494,386	42,600	536,986
		95	470,710	0	0	0	470,710	12,150	482,860
		94	430,493	0	0	5	430,498	61,973	492,471
		88	217,144	0	0	0	217,144	29,700	246,844
2397	Schiffli Machine Embroideries	96	No reports received						
		95	No reports received						
		94	255	0	0	0	255	0	255
		88	No reports received						
2399	Fabricated Textile Products, nec*	96	69,597	0	0	0	69,597	11,700	81,297
		95	74,387	5	0	250	74,642	7,700	82,342
		94	16,508	0	0	0	16,508	7,700	24,208
		88	750	0	0	0	750	0	750
	Multiple within SIC Code 23	96	No reports received						
		95	No reports received						
		94	33,595	0	0	0	33,595	0	33,595
		88	36,807	250	0	99	37,156	0	37,156
	Invalid SIC Code within SIC Code 23	96	156,315	0	0	0	156,315	0	156,315
		95	155,077	0	0	0	155,077	0	155,077
		94	161,147	2	0	0	161,149	0	161,149
		88	200,984	0	0	40,500	241,484	40,500	281,984
	Total for SIC Code 23	96	1,132,350	0	0	5	1,132,355	62,927	1,195,282
		95	1,231,889	5	0	250	1,232,144	27,842	1,259,986
		94	1,311,246	3	0	25	1,311,274	69,673	1,380,947
		88	881,030	250	0	40,849	922,129	103,568	1,025,697

Note: On-site Releases from Section 5 of Form R and Off-site Releases from Section 6 (transfers off-site to disposal) of Form R. Forms with more than one 4-digit SIC code within SIC code 23 are assigned to the "multiple" category.

*nec: not elsewhere classified.



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Table 5-15. TRI Other On-site Waste Management by 4-digit SIC Code, 1988 and 1994-1996: Apparel and Fabricated Textiles, SIC Code 23

SIC Code	Industry	Year	Recycled On-site Pounds	Energy Recovery On-site Pounds	Treated On-site Pounds	Total On-site Waste Management Pounds
2321	Men's & Boys' Shirts	96	0	0	0	0
		95	0	0	0	0
		94	No reports received			
		88	No reports received			
2322	Men's & Boys' Underwear & Nightwear	96	No reports received			
		95	No reports received			
		94	0	0	1,609	1,609
		88	NA	NA	NA	NA
2326	Men's & Boys' Work Clothing	96	No reports received			
		95	No reports received			
		94	No reports received			
		88	NA	NA	NA	NA
2329	Men's & Boys' Clothing, nec*	96	0	0	0	0
		95	0	0	0	0
		94	0	0	0	0
		88	NA	NA	NA	NA
2337	Women's & Misses' Suits & Coats	96	0	0	42,000	42,000
		95	0	0	81,000	81,000
		94	0	0	109,000	109,000
		88	No reports received			
2341	Women's & Children's Underwear	96	No reports received			
		95	No reports received			
		94	No reports received			
		88	NA	NA	NA	NA
2353	Hats, Caps, & Millinery	96	0	0	0	0
		95	0	0	0	0
		94	0	0	0	0
		88	NA	NA	NA	NA
2371	Fur Goods	96	No reports received			
		95	No reports received			
		94	0	0	0	0
		88	NA	NA	NA	NA
2381	Fabric Dress & Work Gloves	96	No reports received			
		95	No reports received			
		94	No reports received			
		88	NA	NA	NA	NA
2385	Waterproof Outerwear	96	No reports received			
		95	No reports received			
		94	No reports received			
		88	NA	NA	NA	NA

Note: Data from Section 8 of Form R. Forms with more than one 4-digit SIC code within SIC code 23 are assigned to the "multiple" category.

*nec: not elsewhere classified.



Table 5-15. TRI Other On-site Waste Management by 4-digit SIC Code, 1988 and 1994-1996: Apparel and Fabricated Textiles, SIC Code 23, Continued

SIC Code	Industry	Year	Recycled On-site Pounds	Energy Recovery On-site Pounds	Treated On-site Pounds	Total On-site Waste Management Pounds
2386	Leather & Sheep-lined Clothing	96	No reports received			
		95	No reports received			
		94	No reports received			
		88	NA	NA	NA	NA
2389	Apparel & Accessories, nec*	96	0	0	0	0
		95	0	0	0	0
		94	31,405	0	0	31,405
		88	NA	NA	NA	NA
2392	Household Furnishings, nec*	96	47,864	0	0	47,864
		95	42,230	0	0	42,230
		94	44,110	0	0	44,110
		88	NA	NA	NA	NA
2393	Textile Bags	96	0	0	0	0
		95	0	0	0	0
		94	0	0	0	0
		88	No reports received			
2394	Canvas & Related Products	96	No reports received			
		95	0	0	0	0
		94	0	0	0	0
		88	No reports received			
2395	Pleating & Stitching	96	No reports received			
		95	No reports received			
		94	No reports received			
		88	NA	NA	NA	NA
2396	Automotive & Apparel Trimmings	96	130,640	0	548,347	678,987
		95	76,670	0	419,000	495,670
		94	149,030	0	343,848	492,878
		88	NA	NA	NA	NA
2397	Schiffli Machine Embroideries	96	No reports received			
		95	No reports received			
		94	0	0	38,955	38,955
		88	No reports received			
2399	Fabricated Textile Products, nec*	96	0	0	0	0
		95	0	0	1,405	1,405
		94	0	0	0	0
		88	NA	NA	NA	NA
	Multiple within SIC Code 23	96	No reports received			
		95	No reports received			
		94	0	0	0	0
		88	NA	NA	NA	NA
	Invalid SIC Code within SIC Code 23	96	11,872	0	0	11,872
		95	19,411	0	0	19,411
		94	21,391	0	0	21,391
		88	NA	NA	NA	NA
	Total for SIC Code 23	96	190,376	0	590,347	780,723
		95	138,311	0	501,405	639,716
		94	245,936	0	493,412	739,348
		88	NA	NA	NA	NA

Note: Data from Section 8 of Form R. Forms with more than one 4-digit SIC code within SIC code 23 are assigned to the "multiple" category.

*nec: not elsewhere classified.



treatment and no forms in 1996. The miscellaneous apparel and accessories industry (SIC code 2389) was the third-ranked industry, reporting 7,000 pounds in 1994 and 1,000 in 1996. This reduction was attributable to transfers to recycling.

The automotive and apparel trimmings industry (SIC code 2396) reported the largest increase in transfers off-site for further waste management for 1994-1996, from 36,000 pounds in 1994 and 56,000 pounds in 1996. The miscellaneous fabricated textile products industry (SIC code 2399) ranked second for increases in this category, increasing from 5,000 pounds to 16,000 pounds. The principal factor in both industries' increase was reporting of larger amounts of transfers to energy recovery. No other sectors reported increases from 1994 to 1996.

Table 5-16 presents data for the apparel and fabricated textiles sector's transfers off-site for further waste management.

Facilities with Large Increases and Decreases in Releases, 1988-1996

Glenmore Plastic Industries in Brooklyn, New York (did not report in 1988, SIC code 2392 in 1996), was first in increases with an overall increase of 176,000 pounds. The chemical 1,1,1-trichloroethane was responsible for 71% of the increase. Printing operations for shower curtains and table cloths used 1,1,1-trichloroethane as a solvent for inks. The plant did not start using the chemical until after the 1988 reporting year. However, beginning in 1992, the facility began converting to water-based inks. Since the 1996 reporting year, Glenmore has switched entirely to water-based inks and has ceased using 1,1,1-trichloroethane altogether. (For more information on the Glenmore facility, see "Facilities with Large Increases and Decreases in Waste Management, 1991-1996.")

Tri-Con Industries, Ltd., in Columbia, Missouri (did not report in 1988, SIC code 2351 in 1996), was the second-ranked facility for increases with a total increase of 156,000 pounds. Methyl ethyl ketone accounted for 75% of the increase. The facility closed in 1996. No information was available.

Hat Brands, Inc., in Garland, Texas (did not report in 1988, SIC code 2353 in 1996), was third in increases with 103,000 pounds. 82,000 pounds of methyl isobutyl ketone (MIBK) stack emissions were reported in 1996. This made up 80% of the facility's overall increase. Now operating under the name, HATCO, the facility is the site of straw hat manufacture. The straw hats are coated with a lacquer that contains MIBK. The facility contact stated that no information was available for reporting years prior to 1995 and that it was unclear why the facility did not report in 1988.

Champion Products in Perry, New York (SIC code 2389), was first in decreases with 97,000 pounds. A 55,000 pound reduction in dichloromethane reporting accounted for 57% of the facility's overall decrease. Between 1988 and 1996, the facility's production focus shifted from cotton to nylon athletic wear. Less dichloromethane was required to clean the nylon products, according to the facility contact. The facility has also undergone a decrease in production between comparison years.

E.R. Moore Company in Chicago, Illinois (SIC code 2388 in 1988 and 2389 in 1996), ranked second with a 95,000 pound decrease, all in reported tetrachloroethylene releases. The reduction is attributable to two factors, according to the facility contact: a cleaning process substitution and more frequent monitoring. E.R. Moore manufactures and rents academic caps and gowns.



Table 5-16. TRI Transfers Off-site for Further Waste Management by 4-digit SIC Code, 1988 and 1994-1996: Apparel and Fabricated Textiles, SIC Code 23

SIC Code	Industry	Year	Transfers to Recycling Pounds	Transfers to Energy Recovery Pounds	Transfers to Treatment Pounds	Transfers to POTWs Pounds	Other Off-site Transfers Pounds	Total Transfers Off-site for Further Waste Management Pounds
2321	Men's & Boys' Shirts	96	0	0	0	0	0	0
		95	0	0	0	0	0	0
		94	No reports received					
		88	No reports received					
2322	Men's & Boys' Underwear & Nightwear	96	No reports received					
		95	No reports received					
		94	0	0	0	750	0	750
		88	NA	NA	0	28,667	0	NA
2326	Men's & Boys' Work Clothing	96	No reports received					
		95	No reports received					
		94	No reports received					
		88	NA	NA	0	30,164	0	NA
2329	Men's & Boys' Clothing, nec*	96	686	257	35	0	0	978
		95	217	0	225	0	0	442
		94	0	0	5,285	0	0	5,285
		88	NA	NA	0	0	0	NA
2337	Women's & Misses' Suits & Coats	96	0	0	0	250	0	250
		95	0	0	0	250	0	250
		94	0	0	0	250	0	250
		88	No reports received					
2341	Women's & Children's Underwear	96	No reports received					
		95	No reports received					
		94	No reports received					
		88	NA	NA	0	22,000	0	NA
2353	Hats, Caps, & Millinery	96	754	63,304	0	0	0	64,058
		95	2,554	37,028	2,220	0	0	41,802
		94	7,787	50,034	14,600	0	0	72,421
		88	NA	NA	2,277	0	4,811	NA
2371	Fur Goods	96	No reports received					
		95	No reports received					
		94	0	913	4,868	0	0	5,781
		88	No reports received					
2381	Fabric Dress & Work Gloves	96	No reports received					
		95	No reports received					
		94	No reports received					
		88	NA	NA	29,200	0	0	NA
2385	Waterproof Outerwear	96	No reports received					
		95	No reports received					
		94	No reports received					
		88	NA	NA	9,100	500	0	NA
2386	Leather & Sheep-lined Clothing	96	No reports received					
		95	No reports received					
		94	No reports received					
		88	NA	NA	0	0	0	NA

Note: Transfers Off-site for Further Waste Management from Section 6 (excluding transfers off-site to disposal) of Form R. Other Off-site Transfers are transfers reported without a valid waste management code. Forms with more than one 4-digit SIC code within SIC code 23 are assigned to the "multiple" category.
***nec:** not elsewhere classified.



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Table 5-16. TRI Transfers Off-site for Further Waste Management by 4-digit SIC Code, 1988 and 1994-1996: Apparel and Fabricated Textiles, SIC Code 23, Continued

SIC Code	Industry	Year	Transfers to Recycling Pounds	Transfers to Energy Recovery Pounds	Transfers to Treatment Pounds	Transfers to POTWs Pounds	Other Off-site Transfers Pounds	Total Transfers Off-site for Further Waste Management Pounds
2389	Apparel & Accessories, nec*	96	0	755	500	0	0	1,255
		95	0	0	1,250	0	0	1,250
		94	6,001	0	625	0	0	6,626
		88	NA	NA	4,348	0	0	NA
2392	Household Furnishings, nec*	96	0	0	0	0	0	0
		95	0	0	0	0	0	0
		94	0	0	3,565	0	0	3,565
		88	NA	NA	0	10,975	0	NA
2393	Textile Bags	96	0	0	0	0	0	0
		95	0	0	750	0	0	750
		94	0	0	0	0	0	0
		88	No reports received					
2394	Canvas & Related Products	96	No reports received					
		95	0	0	0	0	0	0
		94	0	0	0	0	0	0
		88	No reports received					
2395	Pleating & Stitching	96	No reports received					
		95	No reports received					
		94	No reports received					
		88	NA	NA	0	33,858	0	NA
2396	Automotive & Apparel Trimmings	96	0	56,072	0	0	0	56,072
		95	0	56,292	0	0	0	56,292
		94	0	35,469	430	0	0	35,899
		88	NA	NA	250	0	0	NA
2397	Schiffli Machine Embroideries	96	No reports received					
		95	No reports received					
		94	0	0	0	0	0	0
		88	No reports received					
2399	Fabricated Textile Products, nec*	96	0	16,185	0	5	0	16,190
		95	0	10,307	5	5	0	10,317
		94	2,200	1,631	5	1,636	0	5,472
		88	NA	NA	0	0	0	NA
	Multiple within SIC Code 23	96	No reports received					
		95	No reports received					
		94	0	0	0	0	0	0
		88	NA	NA	0	0	0	NA
	Invalid SIC Code within SIC Code 23	96	0	0	0	0	0	0
		95	250	0	55,600	0	0	55,850
		94	72,242	37,468	92,321	0	0	202,031
		88	NA	NA	250	150,566	540	NA
	Total for SIC Code 23	96	1,440	136,573	535	255	0	138,803
		95	3,021	103,627	60,050	255	0	166,953
		94	88,230	125,515	121,699	2,636	0	338,080
		88	NA	NA	45,425	276,730	5,351	NA

Note: Transfers Off-site for Further Waste Management from Section 6 (excluding transfers off-site to disposal) of Form R. Other Off-site Transfers are transfers reported without a valid waste management code. Forms with more than one 4-digit SIC code within SIC code 23 are assigned to the "multiple" category.
***nec:** not elsewhere classified.



Sandusky, Ltd., in Sandusky, Ohio (SIC code 2396), was third with a 90,000 pound reduction. The manufacturer of automotive vinyls, such as door panels and dashboard material, also ranked first for increases in waste management (see “Facilities with Large Increases and Decreases in Waste Management, 1991-1996”). Methyl ethyl ketone (MEK), used as an ink solvent, accounted for 81% of the facility's decrease. Conversions to water-based inks within some processes at the plant resulted in a significant reduction of MEK releases between 1988 and 1991. MEK was not eliminated from all processes, however. A production increase between 1994 and 1996 resulted in the facility's ranking as a top *increaser* in total amount of waste managed between 1991 and 1996, with 82% of this increase attributable to MEK reporting.

Other Apparent Increases and Decreases in Releases, 1988-1996

In the TRI database, there are other facilities with large apparent increases and decreases, which have been identified as reporting errors or plant closures. Because these are errors or plant closures and not actual changes in the data, these facilities are not discussed in detail here. There is one such facility in the apparel and fabricated textiles sector:

Grimes Aerospace Company, Columbus, Ohio,
decrease of 98,000 pounds, plant closure.

1991-1996 Waste Management Data for Apparel and Fabricated Textiles

Table 5-17 summarizes on- and off-site waste management data for the apparel and fabricated textiles sector for 1991, when TRI began collecting this information, and the three most recent years (1994-1996). Total production-related waste reported in this sector decreased from 2.3 million pounds to 2.1 million pounds (8.3%) from 1991 to 1996.

Decreases from 1991 to 1996 were reported for on-site recycling (31.9%), off-site recycling (65.7%), off-site treatment (96.3%) and quantities released on- and off-site (12.2%). Increases were reported in on-site treatment (56.1%) and off-site energy recovery (93.8%).

Figure 5-13 illustrates the percentage change in waste management quantities in this sector from 1991 to 1996.

The changes in the apparel and fabricated textiles sector's management of TRI chemicals in waste from 1991 to 1996 show little improvement, as measured by the waste management hierarchy (explained in Chapter 1). As production-related waste decreased in this sector, both releases and recycling also decreased. These are, respectively, the least desirable management option for environmental consequences and the most environmentally desirable option for waste that cannot be eliminated at the source.

Facilities with Large Increases and Decreases in Waste Management, 1991-1996

Sandusky, Ltd., in Sandusky, Ohio (SIC code 2396), was first in increases of production-related waste. The manufacturer of automotive vinyls, such as door panel and dashboard material, was ranked third for decreases in releases (see “Facilities with Large Increases and Decreases in Releases, 1988-1996”). Methyl ethyl ketone, used as an ink solvent, was responsible for 82% of the facility's overall 286,000-pound increase. A production increase is cited as the reason for the change.

Tri-Con Industries, Ltd., in Columbia, Missouri (SIC code 2351), was the second-ranked facility for increases with a total increase of 168,000 pounds. Methyl ethyl ketone, a significant contributor to the facility's ranking as a major increaser in releases (see “Facilities with Large Increases and Decreases

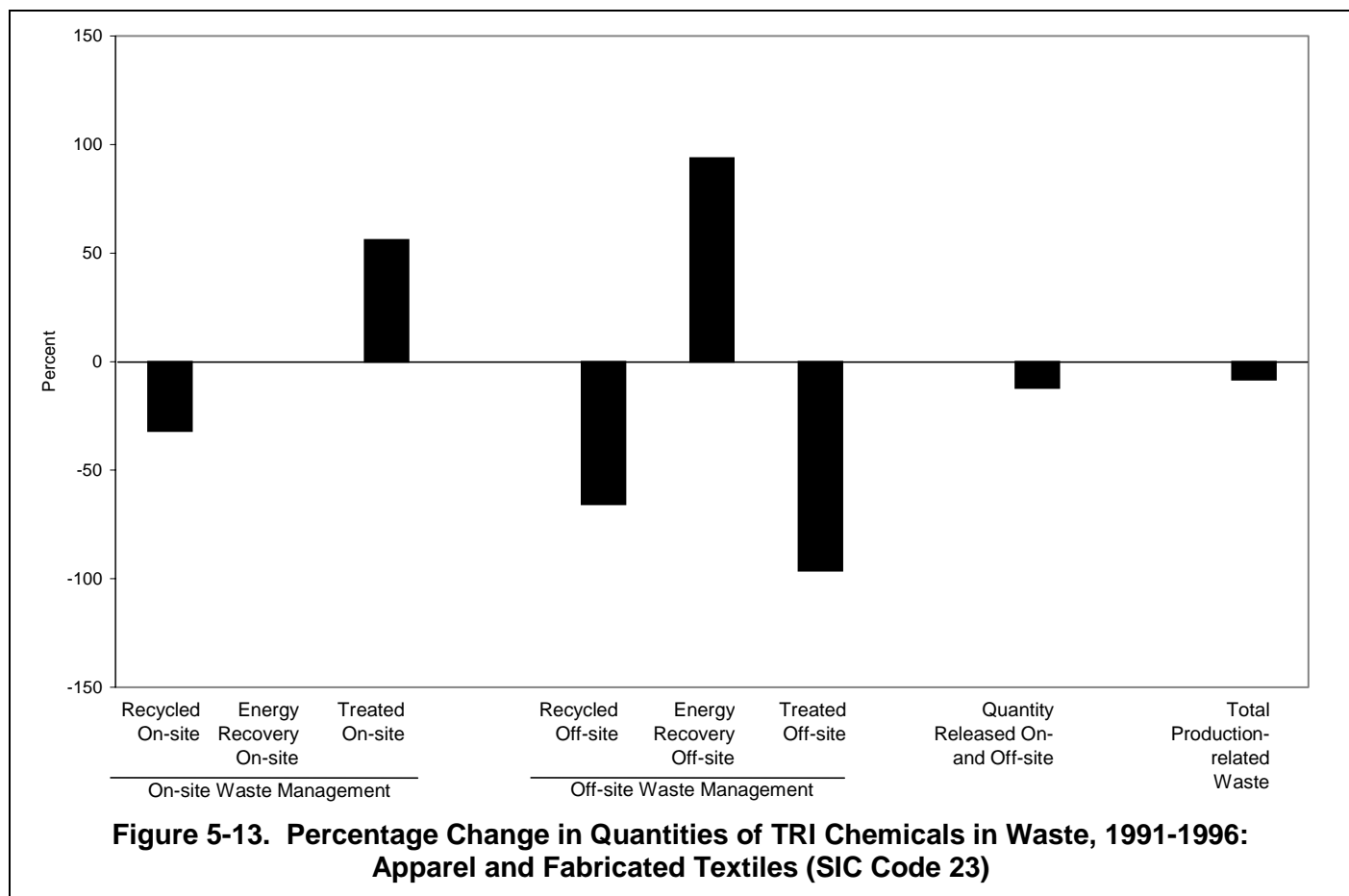


Chapter 5 — TRI Data for Apparel and Fabricated Textiles

Table 5-17. TRI Waste Management Data, 1991, 1994-1996: Apparel and Fabricated Textiles, SIC Code 23

Waste Management Activity	1991 Pounds	1994 Pounds	1995 Pounds	1996 Pounds
<u>On-site Waste Management</u>				
Recycled On-site	279,602	246,116	138,311	190,376
Energy Recovery On-site	0	0	0	600
Treated On-site	378,208	493,412	501,405	590,347
Total On-site Waste Management	657,810	739,528	639,716	780,723
<u>Off-site Waste Management</u>				
Recycled Off-site	4,196	82,225	24,089	1,440
Energy Recovery Off-site	70,359	125,485	103,599	136,350
Treated Off-site	220,250	128,429	66,539	8,102
Total Off-site Waste Management	294,805	336,139	194,227	145,892
Quantity Released On- and Off-site	1,388,265	1,374,738	1,247,993	1,219,144
Total Production-related Waste	2,340,880	2,450,405	2,081,936	2,145,759
Non-Production-related Waste	6,066	242	23	3
Waste Management Activity	Change 1994-1995 Percent	Change 1995-1996 Percent	Change 1991-1996 Percent	
<u>On-site Waste Management</u>				
Recycled On-site	-43.8	37.6	-31.9	
Energy Recovery On-site	--	--	--	
Treated On-site	1.6	17.7	56.1	
Total On-site Waste Management	-13.5	22.0	18.7	
<u>Off-site Waste Management</u>				
Recycled Off-site	-70.7	-94.0	-65.7	
Energy Recovery Off-site	-17.4	31.6	93.8	
Treated Off-site	-48.2	-87.8	-96.3	
Total Off-site Waste Management	-42.2	-24.9	-50.5	
Quantity Released On- and Off-site	-9.2	-2.3	-12.2	
Total Production-related Waste	-15.0	3.1	-8.3	
Non-Production-related Waste	-90.5	-87.0	-100.0	

Note: Does not include delisted chemicals, chemicals added in 1994 and 1995, ammonia, hydrochloric acid, and sulfuric acid. Data from Section 8 of Form R (Current Year, Column B) of year indicated.



Note: Does not include delisted chemicals, chemicals added in 1994 and 1995, ammonia, hydrochloric acid, and sulfuric acid. Data from Section 8 of Form R (Current Year, Column B) of year indicated.

in Releases, 1988-1996”), accounted for 77% of the increase. Most of this increase in production-related waste is the result of the facility's increase in MEK releases (reported as quantities released on- and off-site). The facility closed in 1996. No information was available.

United Techs. Automotive Systems in West Olive, Michigan (SIC code 2396), was third with an overall 46,000 pound increase. Phenol was responsible for all of the facility's increase. The chemical is produced as a by-product of a process where recycled fabrics, such as blue jeans, T-shirts, and sweatshirts are shredded and combined with resin and then hot molded into pads that are used in automotive interiors. Phenol is produced in the hot-molding process. The increase in reporting is

largely due to changes in emissions estimation methodology, according to the facility contact.

Burrell-Leder Beltech, Inc., in Skokie, Illinois (SIC code 2399 in 1991, did not report in 1996), was first in decreases with 187,000 pounds. All of this change was due to a switch from solvent-based construction material coatings to water-based coatings. The contact did not specify the type of construction material produced at this site. Methyl ethyl ketone accounted for all of the facility's decrease.

Glenmore Plastic Industries in Brooklyn, New York (SIC code 2392), was second in decreases with an overall 109,000 pound reduction. This plant is ranked as the top increaser in releases from 1988 to 1996 (see “Facilities with Large Increases and



Chapter 5 — TRI Data for Apparel and Fabricated Textiles

Decreases in Releases, 1988-1996"). The chemical 1,1,1-trichloroethane was used as an ink solvent in 1991, when the facility reported releases (also reported as quantity released on- or off-site, a production-related waste category) of 178,000 pounds of this chemical. Beginning in 1992, 1,1,1-trichloroethane usage declined as the facility switched to water-based inks, accounting for the ranking as a major decreaser in production-related waste.

Champion Products, Inc., in Perry, New York (SIC code 2389), was third in decreases with a 99,000 pound decrease. The facility also ranked first in decreases of releases. Dichloromethane reported as quantity released was responsible for 53% of the facility's reduction. See "6.2.2 Facilities with Large Increases and Decreases in Releases, 1988-1996" for more information.

Facilities Contacted for Explanations (alphabetical by facility):

Burrell-Leder Beltech, Inc., Skokie, Illinois:
Eduardo Arce, August 11, 1998 (explanation provided)

Champion Products, Inc., Perry, New York:
Joe Galarneau, August 27, 1998 (explanation provided)

E. R. Moore Company, Chicago, Illinois:
Tom Hoy, September 16, 1998 and Roger Wandersee, September 21, 1988 (explanation provided)

Glenmore Plastics Industries, Brooklyn, New York:
Leslie Liebowitz, August 12, 1998 (explanation provided)

Grimes Aerospace Co., Columbus, Ohio: Ray White, August 12, 1998 (explanation provided)

Hat Brands, Inc., Garland, Texas: Tyra Anderson, August 7 and August 24, 1998 (explanation provided)

Sandusky, Ltd., Sandusky, Ohio: Dinesh Parekh, August 11 and August 12, 1998 (explanation provided)

Tri-Con Industries, Ltd., Columbia, Missouri:
no contact information available.

United Techs. Automotive Systems, West Olive, Michigan: Chris Kull, September 16, 1998 (explanation provided)

